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No. 2323

United States
Circuit Court of Appeals

For the Ninth Circuit.

Transcript of Record.
(IN FOUR VOLUMES)

LOUIS MASON, L. O. CLARK, JOHANNA
FARLIN, C. C. CLARK, L. P. FORES-
TELL, A. F. BUSHNELL, JOHN DOLAN,
PAT LEROUS, J. T. FITZGERALD, and
ELIZABETH BROWN,

Appellants,

vs.

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,


Appellee.

VOLUME I.
(Pages 1 to 384, Inclusive.)

Upon Appeal from the United States District Court for
the District of Montana.

FILED

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[Names and Addresses of Attorneys.]

JOHN A. SHELTON, Butte, Montana,
Solicitor for Complainant and Respondent.
WALSH, NOLAN & SCALLON, Helena, Montana,
and J. A. POORE, Butte, Montana,
Solicitors for Defendants and Appellants.

[1*] *In the Circuit Court of the United States,
Ninth Circuit, District of Montana.*

IN EQUITY.—No. —

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA
FARLIN, C. C. CLARK, L. P. FORES-
TELL, A. F. BUSHNELL, JOHN DOLAN,
PAT LEROUX, J. T. FITZGERALD and
ELIZABETH BROWN,

Defendants.

Bill of Complaint.

To the Judges of the Circuit Court of the United
States for the District of Montana.

1.

The Washington-Butte Mining Company, a cor-
poration, duly created, organized and existing under

*Page-number appearing at foot of page of original certified Record.

and by virtue of the laws of the State of Washington, and a citizen and resident of said State, brings this its bill of complaint against Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Leroux, J. T. Fitzgerald and Elizabeth Brown, citizens and residents of the State of Montana; and thereupon, your orator complains and says:

2.

That your orator, the Washington-Butte Mining Company, is a corporation duly created, organized and existing under and by virtue of the laws of the State of Washington, with its principal office and place of business in the city of Spokane, in said State of Washington, and is a citizen and resident of the said State of Washington, and is fully authorized and empowered by law to own and hold lands, mines and other real estate and to institute this action.

3.

That the said Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Leroux, J. T. Fitzgerald and Elizabeth Brown are each and all residents and [2] citizens of the State of Montana.

4.

And your orator further avers that by virtue of a United States patent for and upon the land hereinafter described, and mesne conveyances thereof by and from the patentees therein, it is the owner in fee simple absolute of the following described premises and all of them, viz.:

All that portion of the Butte and Boston placer

mining claim, Survey No. 3379, situated in Section 16, T. 3 N., R. 7 W., described by metes and bounds as follows, to wit:

Beginning at the northwest corner of the ground herein described, which point is Corner No. 1 of said Survey 3379 and the East quarter corner of Section 17, T. 3 N., R. 7 W. of the principal meridian; thence first course East 818 feet to Corner No. 2; thence second course south $63^{\circ} 15'$ E. 317.5 feet; thence third course south $77^{\circ} 12'$ W. 378 feet; thence fourth course south $0^{\circ} 12'$ E. 600 feet to a point on the south boundary line of said Survey No. 3379; thence fifth course south $77^{\circ} 12'$ W. 600.2 feet to Corner No. 6 of said survey No. 3379; thence sixth course south $12^{\circ} 48'$ E. 394 feet to Corner No. 7; thence seventh course north 87° W. 232.5 feet to Corner No. 8; thence eighth course north $0^{\circ} 12'$ W. 1332 feet to Corner No. 1, the place of beginning, containing approximately 19.25 acres; situated in the county of Silver Bow, State of Montana.

5.

And your orator further avers that said premises are vacant and no one is in the actual occupancy and possession thereof; that the value of said premises exceeds Twenty-five Thousand (\$25,000.00) Dollars.

6.

And your orator further avers that the defendants, and each of them, claim an estate or interest in the premises aforesaid, adverse to your orator; that the claims of defendants, and each of them, are without any right whatever, and that the said defendants have not any estate, right, title, or interest whatever in said

premises or any [3] part thereof.

In consideration whereof, your orator, to the end that it may obtain the relief to which it is justly entitled in the premises, prays the Court to grant to it your writ of subpoena directed to Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Leroux, J. T. Fitzgerald and Elizabeth Brown, the said defendants, requiring them and each of them to appear herein and answer to the several allegations in this bill contained; that they be required to set forth any and every adverse interest, claim, estate or demand in and to said premises, to the end that the same may be justly adjudicated and declared null and void as against your orator, and that the title and ownership of your orator in and to said premises be established and confirmed as against any and all claims of the defendants, or either of them, and all cloud thereon forever removed and defendants, and each of them, enjoined from further asserting the same; that upon the hearing of this suit and an adjudication, your orator be quieted and confirmed in its title to the said premises, and that your orator may have such other and further relief as to the Court may seem meet and proper, and which Equity may require, and for costs.

KIRK, BOURQUIN & KIRK,

Solicitors for Complainant.

[Endorsed]: No. 443. Bill of Complaint. Filed and entered May 11, 1910. Geo. W. Sproule, Clerk. By F. H. Drake, Deputy.

[4] *In the Circuit Court of the United States,
Ninth Circuit, District of Montana.*

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA
FARLIN, C. C. CLARK, L. P. FORES-
TELL, A. F. BUSHNELL, JOHN DOLAN,
PAT LEROUX, J. T. FITZGERALD and
ELIZABETH BROWN,

Defendants.

Answer to [Cross-Bill].

Come now the defendants above named and for their answer to the alleged bill in equity of complainant herein, admit, allege and deny as follows:

1st.—Deny any knowledge or information sufficient to form a belief as to the matters and things set forth and contained in paragraph number 2 of said alleged bill.

2d.—Admit the matters and things set forth and contained in paragraph number 3 of said alleged bill.

3d.—Deny that, by virtue of a United States patent for the land described in paragraph 4 of said alleged bill, or by mesne conveyances thereof by or from the patentees therein, or otherwise or at all, the complainant is the owner in fee simple absolute, or otherwise or at all of any portion of the said lands described in paragraph 4 of said alleged bill, which is

included within the exterior boundaries of the Hornet, Gulf, Olivia, Hope and Rabbit Quartz Lode Mining Claims, which said lodes are hereinafter more particularly referred to and described.

Deny any knowledge or information sufficient to form a belief as to whether by virtue of a United States patent for the land described in paragraph 4 of said alleged bill, or by mesne conveyances thereof by or from the patentees therein, or otherwise, or at [5] all, the complainant is the owner in fee simple, absolute, or otherwise or at all of any portion of the said lands described in paragraph 4 of said alleged bill, which is not included within the exterior boundaries of the said Hornet, Gulf, Olivia, Hope and Rabbit Quartz Lode Mining Claims.

4th.—Deny that said premises are vacant, or that no one is in the actual occupancy or possession thereof. Admit that the value of said premises exceeds twenty-five thousand dollars.

5th.—Admit that the defendants and each of them claim an estate and interest in the premises in said alleged bill mentioned and described, adverse to complainant, but deny that the claims of defendants or each of them, are without any right whatever, or that said defendants have not any estate, right, title or interest whatever in said premises or any part thereof, but, on the contrary, defendants allege that they now are, and were at the time of the commencement of this action, and for a long time prior thereto and ever since have been the owner, in the possession and entitled to the immediate possession of all that portion of the said premises, which is embraced

within the exterior boundaries of the said Hornet, Gulf, Olivia, Hope and Rabbit Quartz Lode Mining Claims. As to any portion of the said premises not within the said exterior boundaries of the said Hornet, Gulf, Olivia, Hope and Rabbit Quartz Lode Claims, or included or embraced in any of the dips, spurs, or angles thereof, these defendants deny that they make any claim of any kind or character whatsoever thereto, and hereby disclaim any right, title, claim or demand thereto or therein.

For a further and affirmative defense and cross-bill herein, these defendants allege:

1st.—That heretofore, to wit, on or about the 11th day of May, A. D., 1891, Simeon V. Kemper and Josephine Lorenz did enter a certain placer claim in the United States Land Office, at Helena, Montana, embracing a portion of Section Sixteen, in Township Three, [6] north of Range seven, west of the principal meridian, in the Summit Valley Mining District, in the county of Silver Bow and State of Montana, said premises being designated by the Surveyor General as Survey No. 3379. That on or about the 19th day of December, 1895, the United States Government issued its certain patent to the said Simeon V. Kemper and Josephine Lorenz for the ground embraced in said Survey No. 3379.

That the said patent so issued to the said Simeon V. Kemper and Josephine Lorenz contained and contain the following condition and exception, to wit:

First: That the grant hereby made is restricted in its exterior limits to the boundaries of the said mining premises, and to any veins or lodes of quartz

or other rock in place bearing gold, silver, cinnibar, lead, tin, copper or other valuable deposits which may have been discovered within said limits subsequent to and which were not known to exist on the 11th day of May, A. D. 1891.

Second: That should any vein or lode of quartz or other rock in place, bearing gold, silver, cinnibar, lead, tin, copper or other valuable deposits be claimed or known to exist within the above-described premises at said last named date, the same is expressly excepted and excluded from these presents.

That at the time of the location of said placer claim, to wit, on the 20th day of December, 1890, and at the time of the application for patent, and at the time of entering the land aforesaid, and at the time and date of the grant and issuance of said patent, certain lodes, veins, or deposits of mineral, ore, or rock in place, carrying copper, silver, lead and other valuable metals and minerals were known to exist within the boundaries of the said described placer claim, and within the boundaries of the legal subdivision described in said patent.

2d.—That the fact that said veins did exist as aforesaid, within the said premises, was known to the locators of said described [7] placer claim, at all of the times hereinbefore mentioned, and that the application for a patent to the said premises as placer ground, did not include any application whatever for a patent to any land, lode or vein so known to exist within the exterior boundaries of said placer claim.

3d.—That by reason of said failure on the part of said locators and applicants for said placer claim,

the said leads and lodes, veins and bodies of mineral known to exist as aforesaid, were excluded from and excepted out of the said patent and grant of said lands to the said placer claimants, and did not pass by said patents, but remained until located as hereinafter specifically set forth, by the predecessors of these defendants, unappropriated public mineral lands of the United States, and subject to location under the mineral laws of the United States.

4th.—That heretofore, to wit, on the 19th day of March, 1900, Samuel Kift and Isaac Knoyle, being then and there citizens of the United States and residents of the State of Montana, entered in and upon the ground hereinabove described, upon which was situated the said known veins or leads, and which were by the express terms of the patents hereinabove referred to, excluded from the operation thereof, and made a discovery on one of said veins, of mineral bearing quartz or rock in place, showing a well-defined wall, and immediately thereafter located a quartz lode mining claim upon said lode or vein, and designated their location as the “Hornet” quartz lode mining claim, and in all respects complied with the laws of the United States and the State of Montana with reference to the discovery and location of quartz lode mining claims; that the said Hornet quartz lode mining claim so located, extended and extends 1500 feet along the course of said vein in an easterly and westerly direction, and 300 feet on each side thereof; that the said Kift and Knoyle did upon the said 19th day of March, 1900, post a notice of location at the point of said discovery, claiming the said vein or lode

as the Hornet Lode Claim, said notice contained the name [8] of said claim, the names of the locators, the date of location, the number of lineal feet claimed in length along the course of the vein each way from the point of discovery, with the width on each side of the center of the vein, and the general course of the vein; that, within ninety days thereafter, they marked the boundaries of said claim, so that they could be readily traced, and sank a discovery shaft to the depth of at least ten feet from the lowest part of the rim of such shaft at the surface, and ran a cross-cut from the bottom thereof, which showed a well-defined crevice or valuable deposit; and thereafter, and within ninety days from the date of posting said notice, they filed in the office of the County Clerk of Silver Bow County, Montana, a declaratory statement, containing the name of the lode claim, the names of the locators, the date of the location, and such a description with reference to some natural object or permanent monument, as would identify the same; the number of lineal feet claimed in length along the course of the vein, each way from the point of discovery, with the width on each side of the center of the vein, and the general course of the lode or vein, as near as might be, the location and dimensions of the discovery shaft, and the location and description of each corner, with the markings thereon, which declaratory statement was verified by the oath of one of them, and that, thereafter, to wit, on the 27th day of December, 1900, they made and filed with the County Clerk and Recorder of Silver Bow County, Montana, an amended declaratory statement thereof.

That thereafter, by due and legal conveyances, these answering defendants became and now are the owners, in possession and entitled to the possession of all of the lands and premises embraced within the exterior boundaries of the said Hornet Lode, and of all lodes, leads and pledges having their apex therein.

5th.—That at the time of the commencement of this action, and for a long time prior thereto, and ever since, these defendants and their predecessors in interest were the owners, in possession and entitled to the possession of the aforesaid Hope, Gulf, Olivia and [9] Rabbit Lode claims. That on the 8th day of May, 1900, one R. O. Merriman discovered within the boundaries of the said Rabbit Lode, a mineral-bearing vein of the character hereinafter described; that on the 15th day of May, 1900, he discovered within the boundaries of the Hope Lode Claim, a mineral-bearing vein of the character hereinafter described; that on the 16th day of May, 1900, he discovered within the boundaries of the Olivia Lode Claim, a mineral bearing vein of the character hereinafter described, and that on the 19th day of May, 1900, he discovered within the boundaries of the Gulf Lode Claim, a mineral-bearing vein of the character hereinafter described; and that, on said respective dates, he located the said respective lode claims, being then and there a citizen of the United States, by discovering within each of said respective claims, said mineral-bearing vein, containing quartz and other rock in place, carrying valuable deposits of silver and copper and having well-defined walls, and extending in an easterly and westerly direction, or in a

slightly northwesterly and southeasterly direction; and that he posted on said dates a notice of location at the discovery of each of said claims, containing the names of the claim, the name of the locator, the date of location, the number of lineal feet claimed in length along the course of the vein each way from the point of discovery, with the width on each side of the center of the vein, and the general course of the vein; that within sixty days thereafter, he marked the boundaries of each, and sank a discovery shaft at the point of discovery on each of them to the depth of more than ten feet from the lowest part of the rim at the surface, and which disclosed at said depth a well-defined crevice of quartz and a valuable deposit of mineral; that said marking was by placing at each corner of each of said claims, a post, marked to designate the corner, not less than four inches square and four feet six inches in length, set one foot in the ground and having a mound of earth or stone, four feet in diameter and two feet in height around the same; that within sixty days, he filed with the County Clerk and [10] Recorder of Silver Bow County, Montana, a declaratory statement for each of said locations, verified by his oath, and containing the name of the claim, the name of the locator, the date of location, and such a description of the location of the claim, with reference to some natural object or permanent monument, as would and did identify it; the number of lineal feet claimed in length along the course of the vein each way from the point of discovery, with the width on each side of the center of the vein, and the general course of the vein;

the dimensions and location of the discovery shaft, and the location and description of each corner, with the markings thereon. That the course of said locations was in an easterly and westerly direction, and the length of each was and is 1500 feet, and with a width on each side of the center of each vein of 300 feet. That heretofore, an amended declaratory statement on each of said claims was filed on behalf of the owners thereof, with the County Clerk and Recorder of Silver Bow County, Montana, for the purpose of taking all benefits of the laws of the State of Montana allowing amended declaratory statements of quartz claims to be filed, and without any waiver of the rights claimed under said original locations, each of said amended declaratory statements being duly verified.

6th.—That the aforesaid veins lie, in large part within the premises mentioned and described in the alleged bill herein, and said lode claims embrace nearly all of said ground described therein; and that each of the aforementioned veins was, on and for a long time prior to the 11th day of May, 1891, well known, and that they contained valuable ores of silver and copper and in sufficient quantities to justify exploitation, all of which was known to the applicants for said placer patent hereinbefore mentioned, at the time of said application, and to the community generally, and that the existence of each and all of the same could have been known prior to the said 11th day of May, 1891, to anyone who would go upon the ground and view or inspect it.

7th.—That prior to the commencement of this ac-

tion, by due and [11] legal conveyances, these answering defendants became and now are the owners, in possession, and entitled to the possession of all of the lands and premises embraced in said quartz lode claims and each thereof, and that during each and every year since the year of the location thereof, these defendants and their predecessors in interest have done or caused to be done one hundred dollars worth of work and improvements upon each of same.

8th.—That the said complainant in this action claims some estate or interest in or to the said Hornet, Gulf, Hope, Olivia and Rabbit Quartz Lode Claims and to the lands embraced therein under the said placer patent so issued to the said Kemper and Lorenz, but that any alleged or pretended claim of the said complainant in this action in or to the said ground included within the exterior boundaries of the said Hornet, Gulf, Hope, Olivia and Rabbit Lodes, is, and at all times has been wholly without right, and in violation of the rights of these defendants, in and to the said lode claims, and cast a cloud upon the title of these defendants. And that said complainant has not any estate, right, title or interest in said premises or any part thereof.

WHEREFORE, defendants pray judgment that complainant take nothing by its said action, and that defendants be adjudged to be the owners and entitled to the possession of the said Hornet, Rabbit, Hope, Olivia and Gulf Lode Claims, and of all veins, dips, spurs and ore bodies contained therein, and the ground and premises within the boundaries thereof, and that the said complainants, and all persons claim-

ing or to claim, by, through or under them, be forever enjoined and restrained from asserting any claim or title or right whatever to the before-mentioned premises, or any part thereof, and from in anywise hindering or interfering with these defendants, or their successors in interest, in the full and peaceable use and enjoyment of the same; that defendants' title be established and quieted against complainant; and for their costs, and for such other relief as these [12] defendants may be entitled to.

L. P. FORESTELL,

I. A. COHEN,

Solicitors and Counsel for Defendants.

Duly verified by Louis Mason, one of the defendants, before I. A. Cohen, a notary public, on June 5th, 1911; and served on counsel for complainant June 5th, 1911; and filed and entered June 5th, 1911.

[13] [Same Title of Court and Cause.]

**Answer of Washington-Butte Mining Company to
Cross-bill of Defendants.**

The Washington-Butte Mining Company, complainant, now and at all times thereafter saving to itself all and all manner of benefit of exception or otherwise that can be or may be had or taken to the many errors, uncertainties and imperfections in the cross-bill of defendants contained, for answer thereto, or to so much thereof as it is advised it is material or necessary for it to make answer to, answering, says:

(1) That it admits all the statements in para-

graph 1 of the cross-bill are true, save and excepting those of the last ten lines thereof, each and all of which it denies.

(2) That it admits that the application for placer patent mentioned in said cross-bill did not include any application for patent to any lead, lode or vein known to exist within the boundaries of said placer claim, and denies that any such lead, lode or vein was at the time of said application and until about nine years thereafter known to exist by any one or at all.

(3) That it admits that Samuel Kift and Isaac Knoyle located the Hornet lode claim, but denies that such location was based on any vein known prior to the discovery thereof by them as alleged in paragraph 4 of said cross-bill.

(4) That it denies that defendants and their predecessors in interest or any or either of them at any time or at all were owners, in possession and entitled to possession, or any or either of them, of the Hope, Gulf, Olivia and Rabbit Lode claims, or any or either of them, or of any of the premises involved herein, and denies that any such claims exist save as pretended and unlawful claims asserted [14] by defendants upon lands owned by plaintiff under and by virtue of said placer patent and mesne conveyances thereunder.

(5) That it has no knowledge or information as to the extent of defendants' succession to the title to the lode claims by them claimed in the said cross-bill, and as to the extent of the work done by them thereon.

(6) That on the 11th of May, 1891, Simeon V. Kemper and Josephine Lorenz, complainant's predecessors in interest, were the owners and in possession and entitled to the possession of the Butte & Boston placer mining claim, situated in Silver Bow County, Montana, and which said ground included the following described piece of mining ground, to wit:

All that portion of the Butte and Boston placer mining claim, Survey No. 3379, situated in section 16, T. 3 N., R. 7 W., described by metes and bounds as follows, to wit:

Beginning at the northwest corner of the ground herein described, which point is Corner No. 1 of said Survey 3379, and the east quarter corner of section 17, T. 3 N., R. 7 W. of the principal meridian; thence first course east 818 feet to Corner No. 2; thence second course south $63^{\circ} 15'$ E. 317.5 feet; thence third course south $77^{\circ} 12'$ W. 378 feet; thence fourth course south $0^{\circ} 12'$ E. 600 feet to a point on the south boundary line of said Survey No. 3379; thence fifth course south $77^{\circ} 12'$ W. 600.2 feet to Corner No. 6 of said survey No. 3379; thence sixth course south $12^{\circ} 48'$ E. 394 feet to Corner No. 7; thence seventh course north 87° W. 232.5 feet to Corner No. 8; thence eighth course north $0^{\circ} 12'$ W. 1332 feet to Corner No. 1, the place of beginning, containing approximately 19.25 acres; situated in the county of Silver Bow, State of Montana.

(7) That on May 11th, 1891, the said Simeon V. Kemper and Josephine Lorenz, predecessors of complainant as aforesaid, duly made application in the

United States Land Office at Helena, [15] Montana, for a patent for the said Butte & Boston placer mining claim, and afterwards duly published and posted notice of their said application for patent.

(8) That during the period of publication of said notice of application for patent for the said Butte & Boston placer mining claim, to wit, on the 24th day of June, 1891, Levi J. Hamilton, Charles S. Passmore and Henry J. Nolan, claiming to have located a portion of the said Butte & Boston placer mining claim, 600 feet in width by 1500 feet in length, including a portion of the ground above described by metes and bounds, as the Pleasant View lode claim, filed in the United States Land Office at Helena, Montana, their protest and adverse claim to the said application of Simeon V. Kemper and Josephine Lorenz, for patent for the said Butte & Boston placer mining claim, as claimants of the alleged Pleasant View lode location.

(9) That afterwards, on July 25, 1891, under instructions issued to them by the Register and Receiver of the United States Land Office at Helena, Montana, the said Charles S. Passmore, Levi J. Hamilton and Henry J. Nolan commenced in a court of competent jurisdiction, to wit, in the District Court of the Second Judicial District of the State of Montana, in and for Silver Bow County, their adverse suit against the said Simeon V. Kemper and Josephine Lorenz, adversing their said application for patent for the said Butte & Boston placer mining claim, designated by file number 3620.

(10) That afterwards, on the 27th day of July,

1891, the Clerk of said District Court duly filed in the United States Land Office at Helena, Montana, notice of the commencement of said adverse suit, and thereupon all proceedings on said application for patent of Simeon V. Kemper and Josephine Lorenz for said Butte & Boston placer mining claim, were in said land office stayed, awaiting the determination of said adverse claim in the said District Court.

(11) That afterwards, such proceedings were had in said case and in said court, that on March 16th, 1895, the said District Court [16] duly rendered its judgment therein, to the effect that said defendants, Simeon V. Kemper and Josephine Lorenz were the owners and entitled to the possession of all the ground claimed by said Passmore et al., as the Pleasant View lode claim, which said ground is described as follows, to wit:

Beginning at a point in the said claim from whence the quarter section corner of sections 16 and 17, township 3 north, range 7 west, bears north 0 degrees 12 minutes west, 993.1 feet distant, and running thence north 77 degrees 12 minutes east, 1500 feet; thence north 0 degrees 12 minutes west 334.3 feet; thence north 68 degrees 15 minutes west, 406.2 feet; thence south 77 degrees 12 minutes west, 1128 feet; thence south 0 degrees 12 minutes east, 600 feet to the place of beginning, containing an area of 19.07 acres, more or less, which said ground is a portion of the ground hereinabove described by metes and bounds.

(12) That during the period of publication of said

notice of application for patent, made by Simeon V. Kemper and Josephine Lorenz on the 11th day of May, 1891, for the said Butte & Boston placer mining claim, to wit, on the 24th day of June, 1891, Levi J. Hamilton, Charles S. Passmore and Henry J. Nolan claiming to have located a portion of said Butte & Boston placer mining claim, 600 feet in width by 1500 feet in length, including a portion of the ground above described, in paragraph No. 6 of this answer, which said location was called by them the Point Pleasant lode claim, filed in the United States Land Office at Helena, Montana, their protest and adverse claim on said Point Pleasant lode claim, to the said application of Simeon V. Kemper and Josephine Lorenz, for patent for the Butte & Boston placer mining claim.

(13) That afterwards, on July 25th, 1891, under instructions issued to them by the Register and Receiver of the United States Land Office at Helena, Montana, the said Charles S. Passmore, Levi J. Hamilton and Henry J. Nolan commenced in a court of competent [17] jurisdiction, to wit, in the District Court of the Second Judicial District of the State of Montana, in and for Silver Bow County, their adverse suit against the said Simeon V. Kemper and Josephine Lorenz, adversing their said application for patent for the said Butte & Boston placer mining claim, designated by file Number 3621.

(14) That afterwards on the 27th day of July, 1891, the Clerk of said District Court duly filed in the United States Land Office at Helena, Montana, notice of the commencement of said adverse suit,

and thereupon all proceedings on said application for patent, of Simeon V. Kemper and Josephine Lorenz for said Butte & Boston placer mining claim, were in said land office stayed, awaiting the determination of said adverse claim in the said District Court.

(15) That afterwards, such proceedings were had in said case and in said court, that on March 16th, 1895, the said District Court duly rendered its judgment therein, to the effect that said defendants, Simeon V. Kemper and Josephine Lorenz were the owners and entitled to the possession of all the ground claimed by said Passmore et al., as the Point Pleasant lode claim, which said ground is described as follows, to wit:

Beginning at a post, whence the quarter section corner of sections 16 and 17, T. 3 N., R. 7 W. bears north 29 degrees 58 minutes west 358 feet; thence south 80 degrees 45 minutes east 1500 feet; thence north 8 degrees 15 minutes east 17.6 feet; thence north 42 degrees 5 minutes west 200 feet to corner No. 3, of the Butte & Boston placer claim; thence north 63 degrees 16 minutes west 800 feet to Corner No. 2, of the Butte & Boston placer claim; thence West 594.2 feet; thence south 8 degrees 15 minutes west 313.4 feet to the place of beginning; containing an area of 9.83 acres, more or less.

(16) And thereupon the said Simeon V. Kemper and Josephine Lorenz, applicants for patent for the Butte and Boston placer mining claim, duly filed in the United States Land Office at Helena, Montana, duly certified copies of said judgments in said causes

Nos. 3620 and 3621, in which judgments said applicants were adjudged the [18] owners and entitled to the possession of all the ground included within the boundaries of the so-called Pleasant View and Point Pleasant Lode Claims, and thereupon the officers of the United States Land Office at Helena, Montana, adopted and confirmed the said judgments of said District Court rendered and entered as aforesaid in the said above-entitled suits and passed the said application for patent, and thereupon the Government of the United States issued and delivered to complainant's said predecessors in interest, Simeon V. Kemper and Josephine Lorenz, applicants for patent for the said Butte and Boston placer claim, its patent, absolutely and without exception or reservation as to all portions of said ground included within the said adverse claims and judgments had in said suits, and as to the other portions of the said Butte and Boston placer mining claim, subject to the exceptions and reservations relative to known lodes, if any, which existed at the date of said application for patent for said Butte and Boston placer mining claim.

(17) That complainant has succeeded by mesne conveyances to the said title so obtained by the said Simeon V. Kemper and Josephine Lorenz, and thereby became and is now the owner and entitled to the possession of all the ground described in paragraph No. 6 of this answer.

(18) Complainant alleges that under the provisions of Sections 2326 and 2333 of the Revised Statutes of the United States, the said action of the offi-

cers of the United States Land Office in staying proceedings under the said application of Simeon V. Kemper and Josephine Lorenz for patent upon the filing of said adverse claims of Passmore et al. on the said Pleasant View and Point Pleasant lode locations and directing the commencement of the said adverse suits of Passmore et al. against Kemper et al., Nos. 3620 and 3621, and the fact that the said District Court duly rendered and entered judgment in the said adverse suits, and each of them, to the effect that the said applicants, Simeon V. Kemper and Josephine Lorenz, were the owners and entitled to the possession of all the ground included [19] within the boundaries of the so-called Pleasant View and Point Pleasant lode locations, and that said lode claimants had no right, title or claim in or to said premises, or any part thereof, and the action of the said land office of the United States in passing the application of Simeon V. Kemper and Josephine Lorenz to patent upon the filing in the said land office of certified copies of said judgments in said adverse suits, holding that the said placer applicants as against the said lode claimants were the owners in possession and entitled to the possession of all the ground involved in said suits, was in effect the adoption and approval of the finding and judgment of the Court, and a finding by the said Land Department that on the 11th of May, 1891, the said placer applicants, as against the said lode claimants, were the owners and in possession of all the ground within the boundaries of the so-called Pleasant View and Point Pleasant lode locations, and was a finding

of fact by the Land Department that on May 11, 1891, there did not exist within the boundaries of the so-called Pleasant View and Point Pleasant lode locations any known lode or vein or lead.

(19) Complainant also alleges and contends that the said exceptions contained in said patent have no reference to the ground involved in said adverse claims and adverse suits, and do not and cannot in any way change the finding and judgment of the Court in said adverse suits and cannot invalidate the action of the Land Department in adopting and confirming said judgments and passing to patent the said applications for patent of Kemper and Lorenz. That defendants have no right, title or possession of, in or to said ground, or any part thereof.

(20) That defendants and their predecessors in interest pretending that lodes, leads and veins were known to exist prior to said application for placer patent, have long subsequent to said application entered upon complainant's premises hereinbefore described, from time to time, and claim to have then discovered lodes, leads or veins, and to have located the same, in extent grossly and [20] fraudulently in excess of any location that could be made on lodes, leads or veins that were known to exist when said application was made, if any such there had been, all as set out in their cross-bill, adversely to complainant against its will and that of its predecessors in interest and without right.

WHEREFORE, the complainant, Washington-Butte Mining Company, prays a decree as by its bill

of complaint it has already prayed.

KIRK, BOURQUIN & KIRK,
Solicitors for Complainant.

Duly verified by S. V. Kemper as vice-president of complainant on June 26, 1911, and served upon counsel for defendants, and filed and entered July 1, 1911.

[21] [Same Title of Court and Cause.]

Replication to Defendants' Answer.

This replicant, Washington-Butte Mining Co., saving and reserving to itself all and all manner of advantages of exceptions which may be had and taken to the manifold errors, uncertainties and insufficiencies of the answer of the defendants, for replication thereunto saith that it doth and will aver, maintain and prove its said bill to be true, certain and sufficient in the law to be answered unto by the said defendants, and that the answer of the said defendants is very uncertain, evasive, and insufficient in law to be replied unto by this replicant; without that, that any other matter or thing in the said answer contained, material or effectual in the law to be replied unto, and not herein and hereby well and sufficiently replied unto, confessed, or avoided, traversed, or denied, is true; all which matters and things this replicant is ready to aver, maintain, and prove as this Honorable Court shall direct and humbly prays as in and by its said bill it hath already prayed.

KIRK, BOURQUIN & KIRK,
Solicitors for Complainant.

Served upon counsel for defendants and filed and entered July 1, 1911.

[22] [Same Title of Court and Cause.]

**Replication to Paragraphs 1 to 5, Inclusive, of
Complainant's Answer to Defendants' Cross-
bill.**

These replicants, Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Leroux, J. T. Fitzgerald and Elizabeth Brown, saving and reserving unto themselves all and all manner of advantages of exception which may be had and taken to the manifold errors, uncertainties and insufficiencies of paragraphs numbered 1 to 5, both inclusive, of the answer of the complainant to the cross-bill of these defendants, for replication thereunto saith that they do and will aver, maintain and prove their said cross-bill to be true, certain and sufficient in the law to be answered unto by the said complainant, and that the answer of the said complainant is very uncertain, evasive and insufficient in law to be replied unto by these replicants; without that, that any other matter or thing in said answer contained, material or effectual in the law to be replied unto, confessed or avoided, traversed or denied, is true; all which matters and things these replicants are ready to aver, maintain, and prove as this Honorable Court shall direct and humbly pray as in and by their said cross-

bill, they have already prayed.

L. P. FORESTELL,
Solicitor for Defendants,

Served upon counsel for complainant and filed and entered August 4, 1911.

[23] [Same Title of Court and Cause.]

**Exceptions to Portion of Complainant's Answer to
Cross-bill.**

Exceptions taken by the said defendants to paragraphs numbered 6 to 20, both inclusive, of complainant's answer to defendants' cross-bill.

1st. For that the allegations contained in said paragraphs numbered 6 to 20, both inclusive, are each and all, (a) impertinent, (b) irrelevant, (c) and contain no defense to defendants' cross-bill and are and each of said allegations is insufficient.

These exceptions are made and urged against each of said paragraphs and each and every separate part and portion thereof.

Wherefore, defendants come, and in all particulars aforesaid except to the paragraphs of the answer mentioned on the grounds alleged and that the same is evasive, imperfect, impertinent, irrelevant and insufficient; and humbly pray that said paragraphs and each and every part thereof be expunged and stricken from said answer and that the complainant may be compelled to put in a full, complete and sufficient answer to said cross-bill, and that they may have such

other relief in the premises as to the Court may seem proper.

L. P. FORESTELL,
Solicitor for Defendants.

Served upon solicitors for complainant, and filed and entered August 4, 1911.

**[Order Sustaining Certain Exceptions and
Overruling Certain Exceptions.]**

[24] [Same Title of Court and Cause.]

This cause heretofore submitted to the Court on exceptions to portions of complainant's answer to cross-bill, came on regularly at this time for the judgment and decision of the Court, and, after due consideration, it is ordered that said exceptions be sustained, except as to paragraphs 6, 17 and 20 of said answer to cross-bill, and as to said paragraphs 6, 17 and 20 said exceptions are overruled.

Entered, in open court, Oct. 14, 1911.

GEO. W. SPROULE,
Clerk.

[Endorsed]: Order Sustaining Exceptions in Part, and Overruling in Part. Filed and entered Oct. 14, 1911.

[25] [Same Title of Court and Cause.]

**Supplemental Answer of the Defendant L. P.
Forestell.**

Now comes the above-named defendant, L. P. Forestell, and for his supplemental answer to the bill

of complaint of the above-named complainant *and* shows the Court, that since the filing of the answer of this defendant to the bill of complaint in the above-entitled suit, and on the 18th day of December, 1911, he has sold and conveyed all of his right, title and interest, legal and equitable, in and to all of the property described in the bill and answer in this suit, to Clinton C. Clark, one of said defendants, and he has not and does not claim any right or interest in any of said property or any part thereof and does not claim any right, title or interest in any of the matters in question in this suit, and I disclaim all right, title and interest, legal and equitable in said property and in all of the said matters, and I submit that the said bill ought to be dismissed as against me with costs.

L. P. FORESTELL.

Counsel and Solicitor in *propria persona*.

L. P. FORESTELL.

Served upon solicitors for complainant, and filed and entered December 18, 1911.

[26] [Same Title of Court and Cause.]

Decree.

This cause having come on regularly for hearing upon the pleadings of the respective parties and the testimony adduced by the said parties before the Standing Examiner herein and heretofore reported to the Court, and the said cause having been argued by counsel and submitted to the Court for its decision, and the said cause having been fully considered:

It is ordered, adjudged and decreed that the com-

plainant is and was at the time of the commencement of this cause the owner in fee of the following described land in the county of Silver Bow, State of Montana, particularly described as follows, to wit:

All that portion of the Butte and Boston Placer Mining Claim, Survey No. 3379, situated in Section 16, T. 3 N., R. 7 W., described by metes and bounds as follows, to wit:

Beginning at the northwest corner of the ground herein described, which point is Corner No. 1 of said Survey 3379 and the east quarter corner of Section 17 T. 3 N., R. 7 W. of the principal meridian; thence first course east 818 feet to Corner No. 2; thence second course south $63^{\circ} 15'$ E. 317.5 feet; thence third course south $77^{\circ} 12'$ W. 378 feet; thence fourth course south $0^{\circ} 12'$ east 600 feet to a point on the south boundary line of said Survey No. 3379; thence fifth course south $77^{\circ} 12'$ W. 600.2 feet to Corner No. 6 of said survey No. 3379; thence sixth course south $12^{\circ} 48'$ E. 394 feet to Corner No. 7; thence seventh course north 87° W. 232.5 feet to Corner No. 8; thence eighth course north $0^{\circ} 12'$ W. 1332 feet to Corner No. 1, the place of beginning, containing approximately 19.25 acres; situated in the County of Silver Bow, State of Montana.

That the said defendants, Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, [27] Pat Leroux, J. T. Fitzgerald and Elizabeth Brown and their and each of their agents, servants, grantees and successors in interest, be and each and all of them are hereby perpetually enjoined and forbidden from beginning

or prosecuting any suit at law or in equity against the complainant or its grantees to recover the possession of the said land or any part thereof; and they and each of them is hereby perpetually forbidden and enjoined from setting up any claim or claiming any interest or estate therein adverse to the said complainant, or from disturbing it or its grantees in the quiet and peaceable enjoyment of the said premises and the whole thereof.

That the complainant, Washington-Butte Mining Company, have and recover of and from the defendants, Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, A. F. Bushnell, John Dolan, Pat Leroux, J. T. Fitzgerald and Elizabeth Brown and all and each of them its costs of suit herein, which are hereby taxed in the sum of \$2,195.10.

FRANK S. DIETRICH,

Judge Acting Pursuant to Assignment.

Dated this 2d day of January, 1913.

Filed and entered January 4, 1913.

[28] [Same Title of Court and Cause.]

Decision.

Dec. 24, 1912.

JOHN A. SHELTON, Solicitor for Complainant.

WALSH & NOLAN, and J. T. FITZGERALD,
Solicitors for Defendants.

DIETRICH, District Judge.

The plaintiff, claiming to be the owner of the westerly two-thirds of a tract of ground near Butte,

Montana, patented as the Butte & Boston Placer, brought this suit to quiet its title thereto. The defendants, answering, set forth that at the time of the entry of the placer claim the ground contained therein was in part covered by the Point Pleasant and the Pleasant View lode claims, the locations of which antedate that of the placer claim, and further that within the placer claim there were two known lodes; these lodes the defendants contend they have acquired by location and now own. Apparently the Point Pleasant and the Pleasant View claims were located about the 1st day of April, 1890. The Butte & Boston Placer was located December 20, 1890, entered for patent May 11, 1891, and patented December 19, 1895. The existing lode claims owned by the defendants and in conflict with the placer patent are the Hornet, Rabbit, Hope, Olivia, and Gulf, located in the year 1890, on March 19th, May 8th, May 15th, May 16th, and May 19th respectively.

[29] The proofs are voluminous, and the questions argued present such various phases that I do not attempt to relate the facts in detail, or to do more than to make reasonably intelligible to the interested parties already familiar with the record, the reasons for the general conclusion which I have reached.

As already suggested, defendants rely upon two propositions: (1) That a part of the placer claim was, at the time it was entered and patented, embraced in the two valid existing lode claims, and as to the conflicting area the patent was therefore void (*Mantle vs. Noyes*, 127 U. S. 348); and (2), there being known lodes within the placer claim, they were

excepted by operation of Sec. 2333 of the Revised Statutes of the United States, which provides that in the case of a placer claim embracing a known vein if the application expressly includes such vein the patent shall convey to the applicant the vein as well as the placer ground, but where such vein is known to exist, and it is not referred to in the application, the patent does not convey title thereto.

The placer patent is *prima facie* evidence of title in the plaintiff to the entire area described therein, and the burden is upon the defendants to establish by competent proofs the existence and extent of any exceptions. Migeon vs. Montana Central Ry. Co., 77 Fed. 249; Casey vs. Thieviege, 19 Mont. 342, 48 Pac. 394; Cripple Creek M. Co. vs. Mount Rosa M. Co., 26 L. D. 622.

The proofs tending to show a valid location of the Point Pleasant and Pleasant View claims are meager, and in some respects of doubtful competency, but in the view I have taken this branch of the defense may be disposed of without passing upon the regularity of these locations. The owners of the claims, among them one of the defendants here, protested the placer application, and in support of the protest instituted an adverse suit. After much delay the controversy was settled, in 1895, by an agreement whereby all objections to the patent proceedings were to be withdrawn, and the [30] patentees were to convey to the protestants the eastern one-third of the ground, which embraced all openings where there was any pretension that a vein or lode was disclosed. This agreement was carried out. A

judgment was taken in the adverse suit in favor of the placer applicants, they secured patent, and in due time conveyed the stipulated portion to the protestants. Even if it be held that the judgment was not a conclusive determination of the invalidity, and hence the nonexistence, of the lode claims, and if we liberally construe the Mantle-Noyes decision, *supra*, in favor of the defendants, the execution of the agreement of settlement referred to and the subsequent conduct of the lode claimants, including their acceptance of a conveyance of a large part of the patented area, were effective at least to work an abandonment of the lode claims; any other view would be against good conscience. When the patent issued, therefore, the entire tract embraced within the placer claim was public land of the United States, and the patent operated to convey the title thereto, subject only to the possible exception provided for in Sec. 2333. Disposing of a similar issue in *Migeon vs. Montana Central Ry. Co.*, 77 Fed. 249, the Circuit Court of Appeals of this circuit used the following language: "But the fact is, as appears from the testimony in the record, that the Morning Star lode claim had been abandoned prior to the time of the issuance of the patent to the Noyes placer claims. This being true, it follows that the land embraced in the placer patent was, at the time of the issuance of the patent, a part of the public domain, which the Government had the power to sell and dispose of."

A more serious and complicated question is presented in the second branch of the defense: Was a vein or lode known to exist within the boundaries

of the placer claim?

It is well-settled, and the rule is admitted to be, that this inquiry relates to the date, not of the location of the claim [30½] or of the issuance of patent, but of the application for patent, here May 11, 1891. *Reynolds vs. Iron Silver M. Co.*, 116 U. S. 687; also 124 U. S. 374. *Iron Silver M. Co. vs. Mike & Starr G. & S. M. Co.*, 143 U. S. 394.

There has been some discussion of the degree of proof required of the defendants. Plaintiff invokes the familiar rule of the Maxwell Land Grant case (121 U. S. 325), where it is held that to entitle the Government to set aside a patent alleged to have been procured through fraud the evidence must be clear, unequivocal and convincing. Apparently in *Montana Central Ry. Co. vs. Migeon*, 68 Fed. 811, a case very similar to the present one, the Maxwell case is deemed to be in point, and it is expressly held that to establish the exception provided for in Sec. 2333 the proofs must be "clear and convincing." It is to be noted, however, that the defense here is grounded upon the exception in the statute and in the patent, and does not necessarily imply either actual fraud or even mistake upon the part of the patentees. *Reynolds vs. Iron Silver M. Co.*, 116 U. S. 687. But while in that view the Maxwell case cannot be regarded as controlling, it does not follow that the existence of the statutory exception can be established or its extent defined upon the ground, by mere surmise or conjecture; the evidence must be substantial and of such character that the excepted area, if any, may be intelligently described

with reasonable certainty. The patentees paid the Government for the full extent of the placer claim, the patent gives them the apparent title, and of this apparent right they should not be divested except upon a clear preponderance of the proofs.

Both in the testimony of expert witnesses and in the briefs much consideration is given to the definition of the terms "lode" and "vein," as they are used in the statute. Having in mind what he contends are peculiar conditions of mineralization in the Butte district, an expert, perhaps the leading one, for the defendants, defines a lode or vein to be "mineralized rock in place, such as would justify one in spending time and money in prospecting the [31] same" (p. 1803). In his judgment whether or not the deposit is a vein in no wise depends upon its depth, its lateral extent, or the commercial practicability of its extraction (p. 2040); and both from his formal definition and from his testimony as a whole it is to be inferred that in his view definite boundaries are nonessentials of a vein. As defined by the leading expert of the plaintiff, a vein is "a tabular deposit of mineral, or mineral-bearing rock, in place, within definite boundaries, containing such indications of value as to justify the miner in following it in the pursuit of ore" (p. 732). While in his judgment it is not necessary that a vein have walls, or that the boundaries be visible to the naked eye, there must be boundaries, and they must be susceptible of definition. I have no disposition to add another to the numerous attempts which have been made by the courts to formulate a comprehensive

definition of a lode or vein universally applicable; a number of judicial definitions will be found collated in any of the standard texts on mining law. Attention is called to the variance between the views of the opposing expert witnesses only for the purpose of suggesting that it is, in part at least, accountable for the diversity of conclusions exhibited by the testimony touching the general question whether or not the deposits exposed in certain openings upon the original placer claims are veins. But whatever view may be taken as to the best comprehensive definition of the term "lode" or "vein," it is obvious that in adjudicating a controversy like this a practical meaning must be given to Section 2333, and the terms therein employed. The defendants are demanding that by our decree here we carve out of the placer claim and except therefrom specific concrete parts, namely, certain veins, together with twenty-five feet of the surface upon either side thereof; and under the statute, if there are such veins, and if they were known to exist when the patent application was made, the relief should be granted. But if a vein is to be excepted it must have form and location; its lateral boundaries must be susceptible of definition upon the ground and of description in [32] the decree. Even if, as seems to be the prevailing view, the surface limits of twenty-five feet are to be measured from the center of the vein (1 Lindley on Mines, Second Edition, page 756), it still remains true that such center line can be located only in case the exterior boundary lines are known. In the second place, it is well-settled that to constitute a vein under

this section it is not enough that mineral be present in infinitesimal quantities; the mineralization must be such as to give value to the deposit.

Both points are covered by the decision in *United States vs. Iron Silver M. Co.*, 128 U. S. 673, where the Court said: "It is not enough that there may have been some indications, by out-croppings on the surface, of the existence of lodes or veins of rock in place bearing gold or silver or other metal, to justify their designation as 'known' veins or lodes. To meet that designation the lodes or veins must be clearly ascertained, and be of such extent as to render the land more valuable on that account, and justify their exploitation." And in *Iron Silver M. Co. vs. Mike & Starr G. & S. M. Co.*, 143 U. S. 394, Mr. Justice Field uses the following language: "As stated above, there can be no location of a lode or vein until the discovery of precious metals in it has been had. And then it is not every vein or lode which may show traces of gold or silver that is exempted from sale or patent of the ground embracing it, but those only which possess these metals in such quantity as to enhance the value of the land and invite the expenditure of time and money for their development. No purpose or policy would be subserved by excepting from sale and patent veins and lodes yielding no remunerative return for labor expended upon them. Such exceptions would only be productive of embarrassment to the patentee, without any benefit to others." See also: *Noyes vs. Clifford*, 37 Mont. 138; 94 Pac. 842. *Sullivan vs. Iron Silver M. Co.*, 143 U. S. 431. *Grand Central M. Co.*

vs. Mammoth M. Co., 29 Utah, 490; 83 Pac. 677.

Advancing from the question of what is a lode, under Sec. 2333, to the consideration of what is a "known" lode, it is thought that [33] something more is required than what is necessary to make a discovery for location purposes. The distinction is emphasized and the reasons therefor well stated in Lindley on Mines (Second Edition), sec. 336. See, also: Fitzgerald vs. Clark, 17 Mont. 100, 42 Pac. 273. Grand Central M. Co. vs. Mammoth M. Co., *supra*. Migeon vs. Montana Central Ry. Co., 77 Fed. 249. In the last case, Judge Hawley, delivering the opinion of the Circuit Court of Appeals of this Circuit, uses the following language: "It matters not whether there is a lode or vein actually within the limits, which subsequent developments may prove, if it is not known to exist at the time of the application, the patent for the placer claims will include such lode or vein. In such cases the Supreme Court has repeatedly declared that it is not enough that there may have been some indications by outcroppings on the surface of the existence of lodes or veins of rock in place bearing gold or silver or other precious metals, to justify their designation as 'known veins or lodes'; that, in order to meet that designation, the lodes or veins must be clearly ascertained, and be of such extent as to render the land more valuable on that account, and justify their exploitation." United States vs. Iron Silver M. Co., 128 U. S. 673. Iron Silver M. Co. vs. Mike Starr G. & S. M. Co., 143, 394.

It is further thought that to bring such a lode

within the exception of the statute, its existence must have been actually known to the placer applicants, or it must have been a matter of such common knowledge that it should be presumed to have been known by them, or it was disclosed in such a way that its existence could have been discovered by a fair examination of the ground covered by the placer application.

In the light of these principles, have the defendants made out their defense? Admittedly the direct testimony is hopelessly conflicting. A number of witnesses positively assert that a given deposit constitutes a vein; approximately the same number upon the [34] other side unconditionally controvert this position. The testimony of the plaintiff's witnesses cannot be put aside with the statement that it consists of the theories of mining geologists. All of the witnesses resorted to theory, necessarily, and the only difference is in the sources of the information upon which the theory is based. Every prospector must of necessity theorize. And as to the direct evidence, therefore, it cannot be said that there is any decided preponderance one way or the other. There are, however, other considerations:

First among these is the fact that the placer applicants did not include the alleged lodes in their application, after publicity had been given to the contention that lodes were known to exist, by the protest and adverse suit. By amendment of their application and the payment of the difference between the acreage price for placer ground and that prescribed for lode claims, a mere trifle, they could

have set at rest all question of their exclusive and absolute title to the entire area. In *Iron Silver M. Co. vs. Mike & Starr G. & S. M. Co.*, 143 U. S. 394, 417, this consideration is stated by Justice Field in the following apt and forceful language: "As the lode claim of the defendants in this case embraces a little over ten acres, it is difficult to believe that the applicant for a placer claim embracing it, if it was known to exist at the time, would have neglected to apply for it, when it could have been obtained at the trifling expense of twenty-six dollars. The possibility of others invading the placer boundaries, if within them there was a known vein or lode, would naturally have been the occasion of much uneasiness to the owners of the placer claim, to avoid which we may well suppose they would readily have incurred expenses vastly above the government price of the lode claim. Clear and convincing proof would seem, therefore, to be necessary to overcome the presumption thus arising, that the applicant for the placer patent did not know at the time of the existence of any such lode."

In the next place, it is to be noted that bedrock has never [35] been uncovered within the area in dispute, and it is not pretended that there is at the present time any direct or positive evidence of the existence of a vein therein.

Again, it remains true, after the lapse of twenty years, that the openings existing in 1891 are little more than prospect holes, and that from no one of such openings has a vein of commercial value been traced. The discovery of the Mullins vein, the value

and extent of which is least in doubt, was the result of independent exploration, and I find that it has no connection with the deposit, such as that is, disclosed in the Hornet discovery. While the explanations of the defendants in a measure break the force of these facts they do not entirely destroy their natural significance.

It is furthermore noteworthy that such development work as has been done is of a superficial character. The testimony of the plaintiff's experts was not needed to suggest the inquiry whether there is any considerable depth to the material exposed in the cross-cut between the Hornet discovery and the Mullins tunnel, which the defendants contend is vein matter. If the mineralization is not a mere discoloration and superficial impregnation of the country rock, due to the gradual erosion of the overlying granite, the fact could have been easily and conclusively shown by sinking a shaft to a reasonable depth.

We must also bear in mind that the main question we are considering is to be determined in the light, not of present conditions, but of conditions prevailing on May 11, 1891. Development in the art of extracting and treating ores, increased facilities for transportation, and an enlarged commercial demand have all tended to give value to deposits which twenty years ago would have had little attraction for the prospector and would not have justified expenditures for development or exploitation. For instance, an expert for the defendants, the witness Barker, who has been familiar with the Butte dis-

trict for many years, testifies that ore which, "because of better facilities for doing the work and economy," is mined to-day, might have been [36] cast aside as worthless five years ago (p. 1913). It follows that a deposit deemed to be a vein to-day might, twenty years ago, have not been so regarded either by mining operators or prospectors.

But even if it were to be held that a vein is exposed in the Hornet discovery, and another in the openings to the north, each with a westerly strike, and if we were further to presume that they extend to an indefinite distance, their courses across the plaintiff's ground are left almost entirely to conjecture. Complying with a suggestion made during the course of the oral argument that the defendants furnish descriptions of the vein sufficiently definite to be incorporated into and give effect to a decree, descriptions together with diagrams illustrating the same have been furnished, but upon inspection they appear to be largely, if not wholly, arbitrary. It is, of course, a simple matter to prepare a description of a strip fifty feet in width extending across plaintiff's ground, from a point on the east to a point on the west, but what was desired was a description based upon and tied to the evidence. No references are made to the sources in the record from which these descriptions are derived, and I have been able to discover none. Upon the other hand, a reading of the evidence, in the light of the personal inspection of the premises made in company with and under the guidance of representatives of the litigants, confirms the plaintiff's contention that there is no

substantial or rational basis upon which to rest such a description. As already stated, no vein has ever been uncovered or found upon the plaintiff's premises; if any there be, it lies hidden beneath many feet of unpenetrated detritus. While not yielding to the plaintiff's contention that only so much of a vein is "known" as is actually exposed to view, I am clearly of the opinion that, to be "known," a vein can be "projected" only upon substantial facts which render its existence and location reasonably certain; hopes and beliefs cannot [36½] be made the equivalent of knowledge. *Iron Silver M. Co. vs. Reynolds*, 124 U. S. 374. In 1891, even if we accept the defendants' contention in its entirety, the southern vein was exposed only in the *Hornet* discovery; but the existence and location of a vein, the whole of which is underground, at a point hundreds of feet away, cannot be predicated upon the meagre evidence furnished by a single shaft. Testifying upon the precise point, the expert Barker says: "The strike that you determine there (the discovery shaft) would be the strike for that one portion of the vein only. For instance, if you had other workings on the same lead either one way or the other from it, the strike of that vein would be probably very much different. I have never seen holes on the same vein absolutely line up" (p. 1782). The developments of twenty years throw little light upon the subject. If, as seems to be the defendants' theory, both the *Hornet* discovery and the *Mullins* tunnel are embraced in the same mineralized zone, the whole of which is to be deemed a vein, it is not pretended that

any wall or lateral limit or boundary of such zone has ever been discovered. Nor is such zone or vein known to exist at any point westerly from the plaintiff's ground. Knowledge of the extent and course of what is claimed as the northerly lode, was and is little more substantial or definite. Only by arbitrarily accepting some and rejecting other openings in which it is claimed the vein is exposed can its course be projected across the controverted area with any semblance of reason. Evidence touching the Pittsmont vein upon the west, if of any force, tends to discredit the defendants' theory. While the general course of that vein is easterly and westerly, it is shown to be highly sinuous, and at the easterly extremity of the portion which has been developed, several hundred feet west of the plaintiff's ground, it is very narrow. The representative of the Pittsmont Company, who testified as a witness for the defendants, and who is apparently friendly to them, was willing to say only that the identity of this vein with the defendants' [37] northerly vein is possible, but in view of the undisputed physical conditions, while, of course, there is a possible identity, such identity appears to be wholly improbable. When we add the further substantially uncontroverted fact that the ground in question lies within a zone where northerly and southerly faulting is likely to be found at frequent intervals, it is obvious that we have no data from which we can with reason presume or infer as a fact how far or upon what course the mineralization disclosed in the defendants' opening extends. In *Iron Silver M. Co. vs. Mike & Starr*

G. & S. M. Co., 143 U. S. 394, Mr. Justice Field said: "It is a matter well known to all persons familiar with mining for the precious metals that veins rich in gold and silver are generally found with barren rock within a few feet on each side of them, and that such veins more frequently than otherwise come abruptly to an end." In this connection it is significant that as late as 1900, when the five existing lode claims, namely, the Hornet, Rabbit, Hope, Olivia and Gulf, were located, they were so located as to overlap each other to a very large extent. Unless the locators were much in doubt as to the course of the two veins, it is difficult to understand why the claims should have been so located. The fact apparently signifies the existence of such a doubt, and discloses an intention on the part of the locators to cover the veins along whatsoever course they might be found to take. But notwithstanding these precautions, it now appears that neither of the veins as projected on the supplementary diagram furnished by the defendants coincides with the center line of any one of the lode claims, and indeed the southerly vein intersects only one end line and passes out through the southerly side line of one of the claims. It is wholly improbable that when the five claims were located in 1900 it was thought that either of the veins takes the course which it is now contended by the defendants it does take.

Suppose that on the 11th day of May, in 1891, there had been surveyed and marked out upon the ground two strips, fifty feet wide, [38] as they appear upon the defendants' supplementary dia-

gram, submitted since the oral hearing, is it at all credible that any reasonable man would have offered or paid any substantial amount for the right to extract the mineral from any lodes which might be found apexing therein, such right being limited to such lodes as were shown to be a continuation of the veins disclosed in the Hornet and Rabbit discoveries?

My conclusion of the whole matter is that while on May 11, 1891, there was some evidence of the existence of veins in the openings which had been made, and the indications were sufficient to warrant a prospector in doing further prospect work, and possibly in making lode locations, there were no such disclosures or evidence as would justify us in holding that there was a vein or lode the existence of which was known, in any part of the ground in controversy. And it may with propriety be added that while this conclusion is thought to be required by strictly legal considerations, it is not out of harmony with the equities of the case. While there is wanting technical identity between the parties defendant here and the protestants against the placer application, with whom a compromise was had, and to whom, after patent was issued, a large part of the placer claim was conveyed, there is partial identity and close relationship. In that view, to support the defendants' present contention would be to give to them something which, for a consideration, they relinquished, and to take from the plaintiff something for which it paid. When the defendant Mason and his associates entered into the compromise agree-

ment they must have known that it was the understanding of the placer claimants that in the future no claim would be asserted to the westerly two-thirds of the ground, by reason of lode locations or the alleged existence of known lodes. Except for such understanding they would have had no motive or incentive to make a compromise, by which they assumed the obligation of relinquishing a large portion of their placer claim.

Accordingly a decree will be entered substantially as prayed for in the bill.

[Endorsed]: Filed December 28, 1912.

[39] *In the District Court of the United States, in
and for the District of Montana.*

WASHINGTON-BUTTE MINING COMPANY, a
Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA FAR-
LIN, C. C. CLARK, L. P. FORESTELL, A.
F. BUSHNELL, JOHN DOLAN, PAT
LEROUS, J. T. FITZGERALD and ELIZ-
ABETH BROWN,

Defendants.

Petition for Appeal and Allowance.

The above-named defendants, Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. B. Bushnell, John Dolan, Pat Lerous, J. T. Fitzgerald and Elizabeth Brown, conceiving themselves aggrieved by the decree entered in

the above-entitled court, on the 4th day of January, 1913, in the above-entitled cause, do hereby appeal from said decree to the United States Circuit Court of Appeals for the Ninth Circuit, for the reasons specified in the assignment of errors, which is filed herewith, and they pray that an appeal be allowed, and that a citation issue, as provided by law, and that a transcript of the records and proceedings, upon which said decree was based, duly authenticated, may be sent to the said United States Circuit Court of Appeals for the Ninth Circuit.

And your petitioners further pray that a proper order touching the security to be required of them to perfect their appeal be made.

J. A. POORE,
WALSH, NOLAN & SCALLON,
Solicitors for Defendants.

[Order Granting Petition for Appeal, etc.]

The foregoing petition is hereby granted and the appeal is [40] hereby allowed this 30 day of June, 1913, and the bond on appeal is hereby fixed at the sum of three hundred dollars.

WM. W. MORROW,
Judge of the Circuit Court of Appeals.

Due personal service of within Petition for Appeal made and admitted and receipt of copy acknowledged this 3d day of July, 1913.

JOHN A. SHELTON,
Solicitor for Complainant.

Filed June 26, 1913. Geo. W. Sproule, Clerk.

[41] *In the District Court of the United States, in
and for the District of Montana.*

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA FAR-
LIN, C. C. CLARK, L. P. FORESTELL,
A. F. BUSHNELL, JOHN DOLAN, PAT
LEROUS, J. T. FITZGERALD and ELIZ-
ABETH BROWN,

Defendants.

Assignment of Errors.

The defendants in the above-entitled action, in taking their appeal, make the following assignments of error, which they aver occurred in this cause, to wit:

I.

The District Court of the United States, in and for the District of Montana, erred in rendering and entering a decree herein, in favor of the complainant and against the defendants.

II.

Said Court erred in holding and finding and decreeing accordingly that the land embraced in the placer patent for the ground in controversy was, at the time of the issuance of said patent, a part of the public domain which the Government had the power to sell and dispose of.

III.

The said Court erred in holding and finding and

decreeing [42] accordingly that there were no such disclosures or evidence, as would justify a holding that there were veins or lodes, the existence of which was known prior to the application for placer patent, in any part of the ground in controversy.

IV.

The said Court erred in not holding and finding and decreeing accordingly that there were veins and lodes known to exist within the boundaries of the ground in controversy, to which a placer patent has been issued, prior to May 11, 1891, the date of application for placer patent to said ground.

V.

The said Court erred in not holding and finding and decreeing accordingly that prior to, and at the time of the application for the placer patent to the premises in controversy, that a portion of said premises was embraced in valid existing lode claims, and as to the conflicting area the patent was therefore void.

VI.

The said Court erred in not holding and finding and decreeing accordingly that the defendants, at the time of the commencement of said action and prior thereto, were the owners and entitled to the possession of the ground embraced within the lode claims which conflicted with the ground covered by the placer patent, and in controversy herein.

WHEREFORE the said defendants, Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Lerous, J. T. Fitzgerald and Elizabeth Brown, pray that the

said judgment of the said District Court of the United States for the District of Montana be reversed.

J. A. POORE,

WALSH, NOLAN & SCALLON,

Solicitors for Defendants.

Filed June 26, 1913. Geo. W. Sproule, Clerk.

Due personal service of within Assignment of Errors made and admitted and receipt of copy acknowledged this 3d day of July, 1913.

JOHN A. SHELTON,

Solicitor for Complainant.

[43] *In the District Court of the United States, in
and for the District of Montana.*

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA FAR-
LIN, C. C. CLARK, L. P. FORESTELL,
A. F. BUSHNELL, JOHN DOLAN, PAT
LEROUS, J. T. FITZGERALD and ELIZ-
ABETH BROWN,

Defendants.

Bond on Appeal.

KNOW ALL MEN BY THESE PRESENTS,
That we, Louis Mason, L. O. Clark, Johanna Far-
lin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John
Dolan, Pat Lerous, J. T. Fitzgerald and Elizabeth
Brown, as principals, and the Massachusetts Bond-

ing & Insurance Company, as surety, are held and firmly bound unto the above named Washington-Butte Mining Company in the sum of Three Hundred Dollars (\$300.00), for the payment of which, well and truly to be made, we bind ourselves jointly and severally, and each of our heirs, executors, administrators, successors and assigns firmly by these presents.

Sealed with our seals and dated this 25th day of June, 1913.

WHEREAS, the above-named defendants have prosecuted an appeal to the United States Circuit Court of Appeals, for the Ninth Circuit, to reverse a decree rendered and entered in the above-entitled cause in the United States District Court, for the District of Montana, on the 4th day of January, 1913;

NOW, THEREFORE, the condition of this obligation is such that if the above-named defendants, Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Lerous, J. T. Fitzgerald and Elizabeth Brown, shall prosecute their said appeal to effect, and shall answer all damages and costs [44] that may be awarded against them, if they fail to make good their plea, then the above obligation is to be void; otherwise to remain in full force and virtue.

It is expressly agreed by the Massachusetts Bonding & Insurance Company, the surety above named, that in case of a breach of any condition of this bond the Court may, upon notice of not less than ten (10) days to said Massachusetts Bonding & Insurance

Company, proceed summarily in this action to ascertain the amount which said surety is bound to pay on account of such breach, and render judgment against the said Massachusetts Bonding & Insurance Company and award execution therefor.

LOUIS MASON,
L. O. CLARK,
JOHANNA FARLIN,
C. C. CLARK,
L. P. FORESTELL,
A. F. BUSHNELL,
JOHN DOLAN,
PAT LEROUS,
J. T. FITZGERALD,
ELIZABETH BROWN,

By WALSH, NOLAN & SCALLON,

Of Counsel.

MASSACHUSETTS BONDING AND INSURANCE COMPANY.

By EDW. C. MURRAY,
Attorney in Fact.

Attest: J. R. WINE, Jr.,
Attorney in Fact.

[Corporate Seal of Massachusetts Bonding and Insurance Company]

(Then follows Authenticated Copy of Power of Attorney from Massachusetts Bonding and Insurance Company to Edward C. Murray, J. R. Wine, Jr., and others, authorizing Edward C. Murray, and either of others, to execute bond on behalf of that Company; and then also follows authenticated copy of resolution of Board of Directors of Massachusetts

Bonding and Insurance Company, authorizing execution of such power of attorney by the officers executing the same.)

The foregoing Bond of Appeal is hereby approved this 30th day of June, 1913.

WM. W. MORROW,

Judge of Circuit Court of Appeals.

Filed July 3, 1913. Geo. W. Sproule, Clerk.

[45] *In the District Court of the United States, in
and for the District of Montana.*

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA FAR-
LIN, C. C. CLARK, L. P. FORESTELL,
A. F. BUSHNELL, JOHN DOLAN, PAT
LEROUS, J. T. FITZGERALD and ELIZ-
ABETH BROWN,

Defendants.

Citation on Appeal.

United States of America,—ss.

The President of the United States to Washington-
Butte Mining Company, Complainant, and to
John A. Shelton, Esq., Its Solicitor:

You are hereby cited and admonished to be and
appear before the United States Circuit Court of
Appeals, for the Ninth Circuit, at the City of San
Francisco, State of California, within thirty (30)
days from the date hereof, pursuant to an appeal

filed in the office of the Clerk of the District Court of the United States, in and for the District of Montana, wherein Louis Mason, L. O. Clark, Johanna Farlin, C. C. Clark, L. P. Forestell, A. F. Bushnell, John Dolan, Pat Lerous, J. T. Fitzgerald and Elizabeth Brown are the appellants, and Washington-Butte Mining Company is the appellee, to show cause, if any there be, why the decree in the said appeal mentioned should not be corrected, and why speedy justice should not be done to the [46] parties in that behalf.

WITNESS the Honorable WILLIAM W. MORROW, Judge of the United States Circuit Court of Appeals, for the Ninth Circuit, this 30th day of June, 1913.

WM. W. MORROW,
Judge of the United States Circuit Court, for the
Ninth Circuit.

[47] [Endorsed]: No. 443. In the District Court of the United States, in and for the District of Montana. Washington-Butte Mining Co., Complainant, vs. Louis Mason et al., Defendants. Citation. Filed July 3, 1913. Geo. W. Sproule, Clerk. By Harry H. Walker, Deputy Clerk.

Due personal service of within Citation made and admitted and receipt of copy acknowledged this 3d day of July, 1913.

JOHN A. SHELTON,
L. B.,
Solicitor for Complainant.

[47½] Statement of the Evidence.

Lodged with the Clerk, July 3, 1913.

[48] *In the District Court of the United States, in
and for the District of Montana.*

WASHINGTON-BUTTE MINING COMPANY,
a Corporation,

Complainant,

vs.

LOUIS MASON, L. O. CLARK, JOHANNA FAR-
LIN, C. C. CLARK, L. P. FORESTELL,
A. F. BUSHNELL, JOHN DOLAN, PAT
LEROUS, J. T. FITZGERALD and ELIZ-
ABETH BROWN,

Defendants.

BE IT REMEMBERED: That the above-entitled cause came on regularly for hearing on the 18th day of December, 1911, pursuant to the order of reference therein made and the stipulation of the parties before Oliver T. Crane, standing master and examiner, acting as standing examiner, the Honorable George M. Bourquin and John A. Shelton, Esq., appearing as the solicitors for the complainant, and C. B. Nolan and James T. Fitzgerald appearing as solicitors for the defendants, whereupon the following proceedings were had and evidence introduced:

The complainant offered in evidence certificates to show that the Washington-Butte Mining Company was incorporated on the 2d day of February, 1910. Upon this offer of evidence, objection was

made by the defendants to the introduction of any evidence under the bill of complaint, for the reason that it did not state any ground which would entitle the complainant to the relief prayed for, and did not state any ground which would confer jurisdiction upon a court of equity to investigate the matter in controversy. The certificates were received in evidence over the objection and tended to establish the corporate existence of the complainant. The complainant then [49] offered in evidence a notice of placer location of the Butte and Boston Placer claim, dated December 20, 1890, tending to establish the location of the Butte and Boston placer, covering the ground in controversy and other ground, as part of its claim and title, which notice was received in evidence; and, likewise, offered and there was admitted in evidence a patent from the Government of the United States for said ground, which patent was dated December 19, 1895, the names of the patentees being S. V. Kemper and Josephine Lorenz. Deeds were then offered and received in evidence showing that the title conveyed by the United States passed by mesne conveyances from the grantees therein named to the complainant. Evidence was then offered in behalf of the complainant tending to establish the fact that at the time of the filing of the bill of complaint herein the ground in controversy was vacant and unoccupied.

Thereupon, the complainant rested its case, and thereupon the defendants introduced evidence in said cause as follows:

[50] Defendants' Case.**[Testimony of Samuel Barker, Jr., for Defendants.]**

SAMUEL BARKER, Jr., being first duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Gen. NOLAN.)

My name is Samuel Barker, Jr. I am a civil and mining engineer, and have followed that business in Silver Bow County since 1886. I have made examinations and studies, with reference to the geology and mineralogy of Butte. I have had a great deal to do with mining claims and attendant litigation concerning mining claims. I made the survey of the Butte and Boston Placer, Survey 3379. My surveys did not extend to the quartz claims covering practically the same ground. They were located upon the Butte and Boston Placer. Other surveys of those quartz claims were made by Mr. W. W. Pennington, a member of the firm of Barker-Wilson Company. In connection with the measurements and observations which I made on the ground there, with reference to this Placer Claim and the quartz claims to which I have adverted, I prepared a map showing the ground. (Map marked for identification Defendants' Exhibit "I.") I am now referring to Defendants' Exhibit "I." There is shown upon it the Butte and Boston Placer, Survey 3379. It is represented by the figures "3379" beneath which are printed "Butte and Boston Placer, with the red

(Testimony of Samuel Barker, Jr.)

coloring beneath those words. The exterior boundaries of the said claim are denoted in the same red color. The Butte and Boston Placer as put on it is the official survey. There is also shown upon the map a location or a pretended location known as the Pleasant View Quartz Lode Mining Claim, and is shown on the map by the words "Pleasant View" which are directly underneath the words "Butte and Boston Placer." The exterior bounds of which claim are shown in violet, and there is [51] also shown upon the map a location known as the "Point Pleasant Location." The name of the location is shown just above what is designated on the map as Tunnel No. 3. The exterior boundaries of which claim are shown by the broken black lines. I will say in connection with the Point Pleasant that that claim is not made or put on this map from any survey, but was put on from a map that was introduced in evidence in one of the district court cases and which was a part of the record in those cases, which was numbered either nine thousand or the one directly after it. It was a case wherein the Butte Land & Investment Company and Mason and Merriman were the litigants in both cases. A location, which I think is called the Lynne made by a man named Davenport is not shown on the map. There is shown on the map what is known as the "Hornet" location, represented by the word "Hornet," which is underlined by a blue color, which word is directly north of what is designated as No. 32 Tunnel on this map. The exterior boundaries of this claim, likewise, are

(Testimony of Samuel Barker, Jr.)

denoted in blue. The Golf claim is not represented on the map. The Rabbit claim is represented on the map by the word "Rabbit" underlined by a green coloring. The exterior boundaries of which claim are marked in the same green color. There is a claim shown on the map known as the Olivia quartz claim. It has yellow color underneath, and the exterior boundaries are marked in the same yellow color. There is also shown upon the map the Hope claim. It is marked "Hope" with the brown coloring underneath the name, and the boundaries are denoted by the brown color. Likewise, on this map, Defendants' Exhibit "I," there is a claim marked 1741 the Bullwhacker. It is the lode mining claim which is patented as such.

By Judge BOURQUIN.—Object and move to strike out as not the best evidence. The witness is attempting to speak for the records.

By the EXAMINER.—Let the objection appear in the record.

[52] (Witness continuing:) I have been acquainted with the Bullwhacker as a quartz claim since 1887 or 1888.

Question. Did you yourself have anything to do officially with the proceedings with reference to obtaining a patent?

By Judge BOURQUIN.—Object to that as immaterial.

Answer. No, sir, the claim as marked on this map is the official survey of said claim in its proper relation to the Butte and Boston Placer.

(Testimony of Samuel Barker, Jr.)

By Judge BOURQUIN.—Object as wandering on the part of the witness, and not responsive to the question, incompetent as hearsay and not the best evidence.

(Witness continuing:) I was enabled to place this Bullwhacker claim on the map from the copies of the official surveys in the office of the Barker-Wilson Company. There is also on the map the name Birtha No. 3016, which represents the official survey of the Birtha quartz lode mining claim, the existence of which I have had knowledge for at least ten years. There is an entry on this map “Pacific” 2320, which shows the official survey known as the Pacific lode. It is a quartz claim. I assisted John Gillie in making the survey and I set the corners of that claim.

There is likewise presented here on the map the Copper Queen 3959, which is a lode claim, and I have had personal knowledge of that claim as a quartz claim for more than ten years. There is also on the map a quartz lode mining claim called the Rising Sun 1681, and I have had personal knowledge of the existence of that claim since 1888.

On this map there is a scale which indicates one hundred feet on the ground to be one inch on the map, and by using that scale the relative position of each thing or claim can be found on this map. The legends or designations, such for instance as the “Olivia Disc” and “No. 31 Tunnel” represent the positions of [53] certain shafts or workings on the ground in their proper relative position to one

(Testimony of Samuel Barker, Jr.)

another, and by the application of the scale to the map, the distances between these claims and other objects designated on the map could be correctly ascertained. When I speak of the Vesuvius and the Constitution discoveries, that information was obtained from Mr. Mason and Mr. Clark and others who were on the ground when the survey was being made. I made some few measurements for this map in 1901, but the chief data from which my portion of the map was constructed was made from surveys this year and in this month. I got some of the data for the plat from surveys made by Mr. W. W. Pennington.

Cross-examination.

(By Mr. SHELTON.)

This map is what is known as a sun print from a tracing of the original map, which, so far as that portion which I have already sworn to is concerned, was prepared by myself. This print is taken from a map prepared partly by myself and partly by Mr. Pennington. The information as to some of the notations on the map, as to certain discoveries, was given by Mr. Mason while on the ground. I did not survey any of the boundaries. All those were surveyed by Mr. Pennington, except the Point Pleasant, which, as I have stated, was put on there from a court record heretofore used in the District Court. I made my survey by taking a corner of the Butte and Boston survey, which is actually on the ground, and am able to plat the entire claim on the map. This map does not represent all the excavations and workings. There are some shallow ones not shown. It

(Testimony of Samuel Barker, Jr.)

correctly represents what is indicated there as the Hornet discovery and No. 34 Tunnel, but does not represent all the workings that are there at the present time. There is a cross-cut directly underneath what is shown as a cross-cut from No. 34 Tunnel, the Hornet discovery. The reason that it is not represented on the map is that I just took that yesterday. Both the Hornet and the Gulf are correctly represented on the map and in relation to everything else on the map. I have indicated on the map shafts by the [54] numbers 1, 2, 3, 4, 5 and 6, so that if my testimony was given in relation to any piece of work it would be numbered, and the map would be such that the Court could follow it. Technically speaking, the ground in controversy in this case is not represented on the map, because it is in the Butte and Boston Placer, but the lines representing a certain area are not shown on the plat. I could not tell how many of those workings, which you have represented on your map are within the ground in controversy without putting the lines on the map.

By Mr. SHELTON.—We move to strike out the testimony of this witness relative to the boundaries of the claim represented on the map excepting the Butte and Boston Placer, for the reason that it appears that his testimony is based upon hearsay and is incompetent.

Redirect Examination.

(By Gen. NOLAN.)

I will not be able to place upon this map the territory just described without taking it back to the office,

(Testimony of Samuel Barker, Jr.)

because it involves a metes and bound description. Those cuts shown upon the map are practically all within the boundaries of the placer location in its entirety. Some of them are outside of the limits of the Butte and Boston placer, but so far as that is concerned, the map will speak for itself, for it shows those that are within and those that are without the boundaries of the ground patented as placer ground. This map is correct so far as any work done upon it by me is concerned.

[Testimony of W. W. Pennington, for Defendants.]

[55] W. W. PENNINGTON, being duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Gen. NOLAN.)

My name is W. W. Pennington and I have lived in Butte about nineteen years; my business being that of surveyor and engineer. I am associated with Mr. Barker, who just left the stand, and am a member of the firm of Barker-Wilson Company, which concern is engaged in civil and mining engineering in this city, and am also a deputy mineral surveyor. With reference to Defendants' Exhibit "I," I made the survey which located the corners of the location represented upon that map and some of the workings, and that map is the joint product of the labors of myself and Mr. Barker. I located the corners of the Hope, Hornet, Rabbit, Olivia and the Pleasant View Claims. I also made a survey of a claim called

(Testimony of W. W. Pennington.)

the Constitution in 1901, which is not represented on that map. With reference to the ground represented on Defendants' Exhibit "I," it is on the eastern boundary of the city, and the western boundary of this ground lies about half a mile east of Silver Bow Creek, which is at the bottom of the foothills, and about a mile to the west of Columbia Garden. It lays generally on a smooth, rising slope, on which there is no vegetation or trees, so that one would have no difficulty whatever in observing objects, mounds or any accumulations of dirt on the ground. So far as my labors upon Defendants' Exhibit "I" go, it is correct. I have represented on the map a Hope claim, the corners of which were shown to me by Mr. Mason. Some of the corners of these claims were so that I could identify them on the ground at the time I made this survey. The information which is placed on the map, indicating the discovery shafts, was supplied by Mr. Mason, unless the location notices were up, except the Constitution lode location, that I made myself on the ground. That I could identify by the corners. I know of my own knowledge where the Constitution was, but not the Vesuvius. I [56] have no note that the Hornet shaft was filled in 1901, and the work I did in 1901 was not in my official capacity as a United States Mineral Survey.

Redirect Examination.

(By Gen. NOLAN.)

Some of this ground was adjacent to that of the Pittsmont Mining Company, which has a smelter out

(Testimony of E. S. Shields.)

there. They obtain some of their ore from ground immediately adjacent to this, and they also buy ores from ground adjoining this placer ground. My notes do not show that when I examined the Hornet discovery in 1901 that there was any evidence that the discovery which was 4x6x30 feet was filled up.

Recross-examination.

(By Mr. SHELTON.)

The Pittsmont shafts had not been sunk in 1901, nor was the smelter there.

**[Testimony of E. S. Shields, for Plaintiff
(Recalled).]**

E. S. SHIELDS, heretofore called and sworn as a witness in this cause, was recalled as a witness on behalf of the complainant, the parties hereto agreeing that such testimony should be received as a part of the complainant's case in chief, and the said witness testified as follows, to wit:

Direct Examination.

(By Judge BOURQUIN.)

I am the secretary of the Butte Land & Investment Company and have with me the minute-books of that company for the years 1909 and 1910. The minutes of the meeting of the directors of the Butte Land and Investment Company for December 17, 1909, are as follows:

(No objection.)

“RESOLVED: That all sales, contracts and other agreements affecting real estate, which have been made by the officers of this corporation be hereby

ratified, and that such officers are hereby empowered, authorized and directed to make all purchases, [57] sales, leases and agreements affecting real estate that they may deem wise and prudent in the conduct of the business of this company, and in the prosecution of such business the president and in his absence the vice-president and in the absence of both president and vice-president that James A. Kanty, of Butte, acting president, is empowered and directed to execute and acknowledge any and all deeds and other instruments, requiring signing, executing or acknowledging, and the secretary or assistant secretary are hereby authorized, empowered and directed to attest such instruments as require attestation."

I also have the minutes of the meeting of directors of July 18, 1910. Resolution appearing in those minutes is as follows:

(No objection.)

"RESOLVED, that all sales, contracts and other agreements affecting real estate, which have been made by the officers of this corporation be hereby ratified."

At the meetings at which these resolutions were adopted a quorum of the directors was present.

[Testimony of Louis Mason, for Defendants.]

LOUIS MASON, duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Gen. NOLAN.)

My name is Louis Mason. I am fifty years old

(Testimony of Louis Mason.)

and have lived in Silver Bow County since 1887. My business has been principally smelting and quartz mining. At present I live about fifteen hundred feet south of the south line of the ground in controversy, and have lived there nine or ten years. I immediately took steps after coming here to become familiar with mining conditions of the camp. I was first employed in the Parrot smelter, for, I think, about eight years. The first eighteen months I was [58] handling various kinds of ore, sampling and running ores to the furnaces. After that time for probably eighteen months I worked wheeling charges to smelting furnaces, and the balance of the time I was at the Parrot. I was working on the smelting furnaces, and during that time I became familiar with the ores of this and other camps of the state. I learned what minerals and metals those ores contained. I learned to judge copper ores closely, by getting the assays from the ores I handled, but gold and silver ores were more difficult. After I left the smelter, I followed mining generally to the present time. During that time I made quartz locations for myself in and outside of this county. I have known Mr. S. V. Kemper since 1887. I have been over and know the ground as referred to on the map as the Butte and Boston Placer prior to location of it as such; that is, since March 1887. The records show location to have been December 20th, 1890, and application was made on May 11, 1891. The ground has a gradual slope from the east to the west, a comparatively even or level surface, so that if you were

(Testimony of Louis Mason.)

standing on the western portion of the ground and looking to the east, you would have no difficulty in seeing objects on the surface of the ground. The Bullwhacker, which is situated directly south of the Butte and Boston placer was operating prior to December, 1890, and its shaft showed very good copper ore. You will find short cornered angular pieces of high grade copper or earth promiscuously on the surface. Some places the bedrock is five or six feet below the surface; other places at the lower end it is over one hundred feet. There is a mineralized quartz in the formation that reefs up there. It has a brownish cast. I have never seen any amount of placer mining on the east side of Silver Bow Creek. I saw where some ground had been washed in Park Canyon before I came to Butte. Silver Bow Creek is about three quarters of a mile in a south-westerly direction from the ground in controversy, and I have no knowledge of any placer operations being [59] carried on west of Silver Bow Creek. What placer operation I saw on the Butte and Boston placer was the sinking of shafts, which I was told, was representation work. I was on the ground each and every summer and I saw no placer mining whatever going on, except the sinking of those shafts, which, I think, were sunk before the ground was patented. To my knowledge this ground was located as quartz ground about the first day of April, 1890, as the Point Pleasant and Pleasant View Lode mining claims. The Point Pleasant is represented on the map by the broken line. Those two locations

(Testimony of Louis Mason.)

were made by Charles S. Passmore and Levi E. Hamilton, and I became interested in them about the 16th day of April, 1891. The corners of the claim were marked with mounds of stone and notices were placed at the discovery shafts. Those notices contained the names of locators. Those claims were six hundred feet wide and fifteen hundred feet in length. They overlap each other to some extent. In the case of the Pleasant View location, the discovery was about in the center of the claim, and in the Point Pleasant it was near the east end line. I will designate it by the letter "A." The Pleasant View discovery is noted on the other claim by the words "Pleasant View Discovery," No. 20.

By Gen. NOLAN.—We now desire to offer in evidence a recorded notice of location and declaratory statement of discovery of the Pleasant View Lode Mining Claim.

By Mr. SHELTON.—To this paper the complainant objects on the ground that it is incompetent, irrelevant and immaterial, and further upon the ground that it is not any evidence of the location, and further upon the ground that there has been no evidence as yet of the locations of the Pleasant View claim. There has been no evidence of the discovery, or of the markings of the boundaries, or of doing the requisite amount of work, and further for the reason that the [60] defendants in this case are not deraigning title or claim under the attempted location called the Pleasant View.

(Testimony of Louis Mason.)

By the EXAMINER.—I will mark it Defendants' Exhibit No. 2.

By Gen. NOLAN.—And we also desire to offer in evidence at this stage of the proceedings a certified copy of the notice of location and declaratory statement of the Point Pleasant lode claim.

By Mr. SHELTON.—Complainant objects to this upon the same grounds as to Defendants' Exhibit No. 2.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 3.

The character of the rock found at the discovery on the Pleasant View lode was a green carbonate of copper. The discovery itself is a cut leading into a tunnel. I should judge the opening in the earth was five or six feet in width, and the tunnel, I should judge, is about three and one-half by six feet in height. The material that I found in the tunnel was a greenish cast, copper colored, with cuprites. I should judge it would run about five per cent copper. The rock in this cut and tunnel was regularly in place. I understood you to speak of the Point Pleasant. The discovery on the Pleasant View was a shaft, I should judge about twenty-five feet deep, and about fourteen or fifteenth of April, I found that the collar of the shaft probably fifty pounds of copper ore, which had been thrown out in sinking. The shaft had filled up some at that time and I did not see the bottom of the shaft. There was a dump on the lower side of the shaft, quite a sized one. The fifty pounds of ore appeared to be thrown out on the

(Testimony of Louis Mason.)

upper side. It was of a very green color and pieces I broke off of it have red oxide in the rock. As I have said, the discovery on the Point Pleasant was a cut. The operator got to bedrock in the discovery on the Point Pleasant. I acquired an interest in these [61] properties from the locators.

By Gen. NOLAN.—We desire to offer in evidence a deed from Levi E. Hamilton and Eliza S. Hamilton, his wife, to Charles S. Passmore and Susie M. Passmore and to Louis McClellan Mason, dated April 16, 1891, consideration named being one thousand dollars, transferring an eighth interest in the Point Pleasant and Pleasant View quartz lode claims.

By Mr. SHELTON.—It is objected to on the ground that it is incompetent, irrelevant and immaterial.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 4.

After the execution of this deed, I went upon these claims for the purpose of doing work, about the 17th or 18th of April, 1891, I think. The first work I did was to sink a little shaft on the Point Pleasant about three hundred feet east of the Boston placer, marked on the map as No. 1, and in sinking it I found pieces of copper ore, but no lead. I did not go to bedrock. The next work was about twelve hundred feet in an easterly and one hundred feet in a southerly direction from the north side line of the Butte and Boston placer and about one hundred feet in a southerly direction from the south end line

(Testimony of Louis Mason.)

of the Copper Queen lode, and within the boundary of the Point Pleasant location, marked on the map as No. 1. That shaft was about four feet square, sunk to a depth of about fourteen feet, and bedrock there was about within seven or eight feet of the surface, and from the time I struck bedrock until I reached the bottom, I had good vein matter, and I have ore from that same place at the present time taken out in 1891, from the shaft marked as No. 1 on the Point Pleasant.

By Gen. NOLAN.—We desire to offer this piece of ore in evidence and have it marked as an exhibit.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 5.

This cut No. 1 was examined by me before the 11th of [62] May, 1891. The material that came out of this shaft was piled on the dump, and it is of such a size that it can be readily seen for a distance of a quarter of a mile. I had two assistants, Eli Rea and Grant Pore. The rest of the work that I did on the Point Pleasant prior to May, 1891, went about forty feet in an easterly direction, and I sank another shaft about the size of three and one-half or four feet square to a depth of about twelve and one-half or fourteen feet deep, which is designated on the map as No. 2. I got to bedrock in about approximately seven feet of the surface of the ground. I encountered lead material as I came to bedrock, and I went about six feet below bedrock. During this time I was constantly in lead material, and I have samples here from that shaft. One piece came from possibly

(Testimony of Louis Mason.)

a foot or so below the surface of bedrock; another a little further down; the third piece from about two and one-half or three feet from the bottom, it now being about fifteen feet deep, and I consider this lead matter. A strata crossing shaft No. 2 having the same strike as in shaft No. 1, directly west of the Olivia discovery, have apparently the same dip. I did other work on the Point Pleasant claim before the 11th of May, 1891. It was the third shaft that I sank on the Point Pleasant claim. It was about one hundred and twenty-five feet in an easterly direction from the No. 2 shaft, and I should judge about five feet south from the south end line of the Copper Queen and from the north side line of the Butte and Boston. I sank a shaft there about three and one-half feet square and about twenty-eight feet deep, getting below bedrock, which, at that point, is about eight feet below the surface. I encountered a lead after reaching bedrock, sinking on it about sixteen or eighteen feet, and I have samples of the matter that was taken from that shaft.

By Gen. NOLAN.—I will now offer this in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 6.

[63] By Judge BOURQUIN.—That is the one from shaft No. 2.

By Gen. NOLAN.—Yes.

I consider that it contains copper in paying quantities. I sank another little shaft directly to the east of this one, I think, probably to a depth of eight or

(Testimony of Louis Mason.)

ten feet, prior to May 11, 1891. I went beyond bed-rock, about two feet. The character of the material there was about the character as of these samples.

By Gen. NOLAN.—We will offer that in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 7.

I think that all these openings were on the same vein. This vein had walls. There is a talc seam in this tunnel that runs around between the No. 2 shaft and the shaft which I have just testified about. The strike of that lead is in an easterly and westerly direction. The dip is north. There is some of this lead matter like the samples offered in evidence on the dump. I think this is all the work I did there on the ground prior to May 11, 1891, except I sunk a shaft on the line between the Point Pleasant and the Pleasant View, known as the Hornet shaft, marked on the map as the Hornet discovery. The map shows this to be on the Pleasant View claim. This shaft was probably about four feet square and it was sunk to a depth of about thirty-three feet. I think we encountered bedrock in about fourteen feet. After that I found copper ore in bodies all along down the shaft, which, I should judge, would assay probably from ten to fifty feet. This vein extended throughout the entire shaft, and it is there to-day, so any man can inspect it and see for himself. I have a sample of the ore here that I encountered in sinking the shaft, which was completed before the 11th of May, 1891. There is a dump beside the shaft

(Testimony of Louis Mason.)

all covered with green ore and showed up until recently when other men there in the last two months cleaned out the fill was in the shaft and dumped it over the old dump and covered [64] who said they did so at the instance of the complainant. If I am not mistaken I sunk shaft marked 10 on the map also prior to the 11th of May, 1891. It was about the same size as the others, and, I think, it was something like twenty-odd feet deep. The following year I sank it deeper. I think I went about eight feet in bedrock, and encountered green stained rock, rich in character, but I could not say it was the same lead I encountered in the other shafts. Representation work was done upon those claims in 1892, 1893, 1894 and 1895. The Lynne location was placed on the shaft that is now known as the Hornet shaft which was sunk, in May, 1891. Lee Davenport made the Lynne Location, and at that time the vein was in sight and the discovery was easily made.

By Gen. NOLAN.—We desire to offer this material in evidence taken from the shaft known as the Hornet on the map.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 8.

(Witness continuing:) I have samples taken from various places in the Hornet shaft, and I would surely call it lead material.

By Gen. NOLAN.—We will offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit 9.

(Testimony of Louis Mason.)

(Witness continuing:) I would say that this ore exists in quantities sufficiently large to pay operating. I have worked on three different mines in that vicinity where we shipped such character of ore at a profit. This particular sample that I now speak of is usually called by prospectors and miners cuprite of copper, and I would say that that piece would assay in the neighborhood of seventy-five per cent copper.

By Gen. NOLAN.—We offer this in evidence.

By the EXAMINER.—I will give it the number Defendants' Exhibit No. 10.

(Witness continuing:) Having in mind the discoveries upon the Pleasant View and Point Pleasant and before I did any work [65] on the ground at all, and having in mind the location of the ground with reference to claims contiguous to it, I would judge by the surface indications—quartz float found all over the principal part of the ground, and the pieces of rich copper ground found promiscuously over the surface of the ground and the adjoining claims on which work was done prior to the location of this ground—that there was sufficient evidence on the ground, and from the surroundings to warrant any man in prospecting and developing the ground for quartz. As a result of the work I did there prior to May 11, 1891, I discovered well-defined leads.

By Gen. NOLAN.—We now desire to offer in evidence the recorded notice of location of the Lynne Lode mining claim, recorded in Book "N" of Lode

(Testimony of Louis Mason.)

Locations, Silver Bow County, at page 428, the location made on the 13th day of March, 1895, by Lee Davenport.

By Mr. SHELTON.—This is objected to as incompetent, irrelevant and immaterial.

By Gen. NOLAN.—“Notice of location and declaratory statement of discovery of a claim to quartz lode mining claim. Linnie mining claim, unknown mining district, Silver Bow County, Montana. The undersigned, who citizen of the United States or ha declared intentions to become such citizen hereby declare and give notice to all persons concerned that I have discovered a vein or lode within the limits of the claim hereby located and in said lode a vein or crevasse of quartz or ore with at least one well-defined wall and that I have this 13th day of March, A. D. 1895, located and do hereby locate and claim under and by virtue of Chapter Six, Title 32 of the Revised Statutes of the United States and the laws amendatory thereto and the laws of the State of Montana, a mining claim upon said lode or vein to be designated and name the Linnie quartz lode mining claim extending [66] along said lode or vein one hundred and fifty feet in an easterly direction and 350 feet in a westerly direction from the center of a discovery shaft, at which shaft this notice and statement is posted and three hundred feet on each side from the middle or center of said lode or vein, the surface comprising in all 1500 feet in length along said lode or vein and six hundred feet in width with all rights and privi-

(Testimony of Louis Mason.)

leges as to surface ground and lodes, veins or ledges within the boundaries of said claim and otherwise and the metals, minerals and valuable deposits contained of any kind contained in said veins, lodes or ledges, or within said boundaries which are given or allowed by the laws of the United States aforesaid, or of the State of Montana. The mining claim hereby located is situated in an unknown mining district, Silver Bow County, Montana, and is about one mile east of Silver Bow Mill, between Horse Canyon and Park Canyon. The adjoining claims are the Bullwhacker lode claim on the south, Murray's claim on the west, and Pacific on the east. This location is distinctly marked on the ground so that its boundaries can be readily traced by a stake set at the discovery shaft where this notice and statement is posted this 13th day of March, 1895, by substantial posts or monuments at each corner of the claim and the exterior boundaries of the claim as marked by said posts or monuments are as follows, to wit: Beginning at the northeast corner of the Bullwhacker lode claim which is the southeast corner of the claim herein described, running thence 1500 feet westerly along the north line of the Bullwhacker lode claim to the southwest corner, thence northerly parallel with the section line 600 feet to the northwest corner; thence easterly parallel with the north line of the Bullwhacker lode claim 1500 feet to the northeast corner and thence southerly 600 feet to the place of beginning. The undersigned intend under and according to the laws of the United States and the State

(Testimony of Louis Mason.)

of Montana and do record this notice and statement under oath in the county recorder's office of said county as provided by law. Dated this . . . day of March, A. D. 1895.

[67] LEE DAVENPORT,
Locator and Claimant.

State of Montana,
County of Silver Bow,—ss.

Lee Davenport, being duly sworn, says that he is of lawful age, a citizen of the United States, the locator and claimant of the quartz claim described in the foregoing notice and statement of location of claim and the person whose name is subscribed thereto as the locator and claimant, a citizen of the United States, that he knows the contents of said notice and statement foregoing and that the matters and things therein stated *as* true.

Subscribed and sworn to before me this 29th day of March, A. D. 1895.

[Notarial Seal] CHARLES S. PASSMORE,
Notary Public.

Filed for record March 9th, A. D. 1895, at 11:30 o'clock A. M.

C. HUGH JOHNSON,
County Recorder.

By A. E. Whipps, Deputy."

By the EXAMINER.—The proof of these records are waived, gentlemen?

By Judge BOURQUIN.—Yes.

(Witness continuing:) After the location by Davenport the Lynn timer claim was represented. My-

(Testimony of Louis Mason.)

self and Olivia H. Hopkins, Patrick Mullen, Judge Hamilton and Charles C. Passmore also had an interest in it. After this ground was located by Davenport as the Linnie, he transferred an interest in it to me.

By Gen. NOLAN.—We offer in evidence this deed from Davenport to Mason of an eighth interest in the ground.

By Mr. SHELTON.—It is objected to on the ground that it is incompetent, irrelevant and immaterial, and on the further [68] ground that there is no proof of any location of the Linnie claim. Further, on the ground that the defendants in the case do not claim that they deraign title though Lee Davenport or through the Linnie claim.

By the EXAMINER.—I will mark that Defendants' Exhibit 11.

(Witness continuing:) Representation work was discontinued on this claim in 1897, because the rest of my partners did not desire to pay their portion of representation expenses. The location of this ground as the Horner claim was made by Samuel Kift and Isaac Knoyle. I obtained a lease and bond from the locators and I drove a tunnel there on the Horner ground in an easterly direction, a distance of about two hundred feet, and cleaned the Horner shaft out to a depth, I think, of about twenty-three feet, which is the shaft I sunk prior to May 11, 1891, and marked on the map as the Horner shaft. I put up posts at the corners of the claim and marked thereon what corners they were on, and mounds were also put

(Testimony of Louis Mason.)

there, at least, two and one-half feet high, and probably four and one-half feet wide. Notice of location was not recorded until after Kift and Knoyle had completed their location work. Then it was put on record. They drove a drift west a distance of ten or eleven feet, and showed brown oxide quartz along this strip, which was in the lead that I brought to light in 1891, and they also uncovered mineral in that in that drift, and they put up posts and mounds. As a result of this work, there was recorded a notice of location.

By Gen. NOLAN.—We desire to offer in evidence the recorded notice of location of the Hornet Lode Claim, recorded in Book “T” of Location Notices, Records of Silver Bow County, commencing at page 384 to 387, inclusive.

By Mr. SHELTON.—This is objected to as incompetent, irrelevant and immaterial, and upon the further ground that there [69] has been no competent evidence of the location of the Hornet claim.

By Gen. NOLAN.—“Declaratory statement of the Hornet Mining claim. Summit Valley Mining District, Silver Bow County, Montana. The undersigned who is a citizen of the United States or has become such citizen hereby declare and give notice to all persons concerned that they have discovered a vein or lode bearing silver and copper and other valuable deposits and that they did on the 19th day of March, 1900, under and by virtue of Chapter 6, Title 32 of Revised Statutes of the United States and the laws of the State of Montana locate and claim a min-

(Testimony of Louis Mason.)

ing claim upon said lode or vein which was at said time and is not designated and named the Hornet quartz lode mining claim, extending along said vein or lode one hundred feet in an easterly direction and 1400 feet in a westerly direction from the center of the discovery shaft at which a notice of location was posted one said day as provided by law, and 30° feet on each side from the middle or center of said lode or vein at the surface comprising in all 1500 feet in length along said vein or lode and 600 feet in width. The general course is northwest and southeast, with all the rights and privileges as to surface ground, lodes, veins or ledges within the boundaries of said claim and otherwise and the metals, minerals and valuable deposits of every kind contained in said veins, lodes or ledges, or within said boundaries which are given or allowed by the laws of the United States aforesaid or of the State of Montana. Said mining claim is situated in Summit Valley Mining District, Montana, and is about two and a half miles east of Butte. The adjoining claims are the Bullwhacker on the south, Birtha and the Copper Queen on the east, Mayyough placer on the north and application 888 on the west. Since the date of location the undersigned have cleaned out the discovery shaft which is thirty feet deep and was filled with dirt for ten feet and have run a cross-cut at the bottom twelve [70] feet to the lode which shows a well-defined crevasse and valuable deposits. The location is distinctly marked on the ground beginning at Corner No. 1 of this claim, a post four inches square by four

(Testimony of Louis Mason.)

feet six inches in length and set one foot in the ground with a mound of earth and stone four feet in diameter, two feet in height around the post, and marked Corner Post No. 1, and running thence in a westerly direction 1500 feet to Corner No. 2, a post four inches square by four feet six inches in length and set one foot in the ground, with a mound of earth and stone four feet in diameter by two feet in height around the post and marked Post No. 2, and running thence in a southerly direction 600 feet to Corner No. 3, a post four inches square by four feet six inches in length and set one foot in the ground, with a mound of earth and stone four feet in diameter by two feet in height around the post and marked Post No. 3, and running thence in an easterly direction 1500 feet to Cor. No. 4, a post four inches square four feet six inches in length, set one foot in the ground with a mound of earth and stone four feet in diameter and two feet in height around the post and marked Corner No. 4, and running thence in a northerly direction to corner No. 1, the place of beginning. The undersigned intend to hold this claim under and according to the laws of the United States and of the State of Montana, and to record this declaratory statement in the county clerk's office as provided by law.

Dated this 2d day of June, 1900.

SAMUEL KIFT,

ISAAC KNOYLE,

Locators and Claimants.

(Testimony of Louis Mason.)

State of Montana,

County of Silver Bow,—ss.

Samuel Kift, being first duly sworn, on oath says that he is of lawful age and one of the locators and claimants of [71] the foregoing quartz lode mining claim. That he has read the foregoing declaratory statement, knows the contents thereof and that the matters and things therein contained are true to his own knowledge.

SAMUEL KIFT.

Subscribed and sworn to before me this 2d day of June, 1900.

[Notarial Seal] WILL K. QUARLES,
Notary Public in and for Silver Bow County, Montana.

Filed for record June 2d, 10:50 A. M., 1900.

J. E. MORAN,
County Recorder.

By W. K. Quarles,
Deputy."

By Gen. NOLAN.—We desire to offer in evidence a lease and bond which Mr. Mason obtained for the claim.

By Mr. SHELTON.—Objected to on the ground that it is incompetent, irrelevant and immaterial.

By the EXAMINER.—I will mark this defendants' Exhibit No. 12.

(Witness Continuing:) The Golf claim was located to protect the ground of the claimants of the Hornet did not complete their work or put it on rec-

(Testimony of Louis Mason.)

ord. I had a law suit to establish my title to this property. Location of the Rabbit, Olivia and Hope claims was made by R. O. Merriman, and I afterwards acquired an interest in them from Merriman. These locations were made, I believe, in April or May, in 1900. I worked in connection with other men in making these locations. A shaft [72] was sunk on the Gulf location about twenty-two feet deep and uncovered a lead, which I consider as the same vein uncovered in the so-called Hornet shaft, because the same character of ore was found in the connections between the Gulf shaft and the Hornet shaft. On the Rabbit claim the shaft was sunk to a depth of eleven feet, and a vein was uncovered in which I can produce ore any day. On the Olivia claim a shaft was sunk to a depth of about eleven feet, disclosing a vein or lead, which does not show as much mineral as was shown in the Rabbit shaft. It is my opinion that the discoveries on the Olivia and Rabbit were made upon the same lead that was uncovered on the Point Pleasant claim. There was a discovery of a lead upon the Hope claim. There I sunk a shaft about twenty-three feet deep, and put up corner posts, and marked them "All these notices of location were recorded."

By Gen. NOLAN.—We desire to offer in evidence the recorded notice of location of the Gulf lode mining claim, recorded in Book "Q" of Lode Locations, page 95.

By Mr. SHELTON.—It is objected to on the

(Testimony of Louis Mason.)

ground that it is incompetent, irrelevant and immaterial.

By Gen. NOLAN.—“Declaratory statement of Gulf Lode Mining Claim. Notice is hereby given that the undersigned who is a citizen of the United States has discovered a vein of quartz or other rock in place bearing gold and copper and other valuable deposits and after said discovery, to wit, on the 1st day of May, 1900, did locate said lode as the Gulf lode mining claim by posting the notice required by law at the point of discovery. The general course of the vein is easterly and westerly. The total length of surface included in said location is 1500 feet along the course of the vein, being 100 feet in an easterly direction and 1400 feet in a westerly direction from the said point of discovery and the total width of the said surface is 600 feet, being 300 feet on the north and 300 feet on the south side of the middle [73] of the vein. The boundaries of the said location are so distinctly marked upon the ground that they can be readily traced being more particularly described as follows, to wit: Beginning at the northeast corner which is marked by a post not less than four inches square and four feet six inches in length set one foot in *the, marked* northeast corner No. 1, Gulf Lode, with a mound of earth four feet in diameter by two feet in height around said post; and running thence in a westerly direction fifteen hundred feet to the northwest corner, which is marked by a post not less than four inches square and four feet six inches in length, set one foot in the ground, marked northwest

(Testimony of Louis Mason.)

corner No. 2, Gulf Lode, with a mound of earth four feet in diameter and two feet in height around said post; and running thence in a southerly direction six hundred feet to the southwest corner, which is marked by a post not less than four inches square by four feet six inches in length, set one foot in the ground, marked southwest corner No. 3, Gulf Lode, with a mound of earth four feet in diameter and two feet in height around said post; and running thence in an easterly direction fifteen hundred feet to the southeast corner, which is marked by a post not less than four inches square by four feet six inches in length, set one foot in the ground, marked southeast corner No. 4, Gulf Lode, with a mound of earth four feet in diameter and two feet in height around said post; and running thence in a northerly direction six hundred feet to the place of beginning. The said claim is situated in Summit Valley Mining District (unorganized), Silver Bow County, Montana, and measured from discovery point of said claim as an initial point. The following natural objects and permanent monuments are distant as follows, to wit: New Northern Pacific roundhouse is distant about three and a quarter miles in a westerly direction *in a direction*. The adjoining claims are as follows, to wit: On the northeast the Birtha lode mining claim, on the east the lode mining claim, on the south the [74] lode mining claim, on the west the lode mining claim. This claim is situated in section 16, township 3 N., R. 7 W., Montana meridian. For the purpose of perfecting the

(Testimony of Louis Mason.)

location of this claim as required by law the undersigned has heretofore and within ninety days of posting said notice of location done or caused to be done the following development work upon said claim, to wit: Sinking a discovery shaft twenty-two feet deep and three and a half feet by seven feet in dimensions, and said development work has disclosed a well-defined crevasse and valuable deposit of ore. The undivided interest in the above described location claimed by each of the undersigned is indicated by the fraction set after each name.

R. O. MERRIMAN,
Locator and Claimant.

State of Montana,
County of Silver Bow,—ss.

R. O. Merriman, being duly sworn, on oath says that he is of lawful age and the locator and claimant of the mining claim described in the foregoing declaratory statement, that the said location has been made in good faith, and that he has read the said declaratory statement and knows the contents thereof and that all the statements therein contained are true.

R. O. MERRIMAN.

Subscribed and sworn to before me this 22d day of May, A. D. 1900.

[Notarial Seal] JOHN N. KIRK,
Notary Public in and for Silver Bow County, Montana.

(Testimony of Louis Mason.)

Filed for record May 20th, 1900, at 4:10 o'clock
P. M.

J. E. MORAN,
County Recorder.
By H. E. Burke,
Deputy."

[75] (Witness continuing:) Mr. Merriman and I were related by marriage. I have seen his handwriting repeatedly. I recognize it when I see it. The declaratory statements of the Rabbit, the Olivia and the Hope bear the signature of R. O. Merriman.

By Gen. NOLAN.—We desire to offer in evidence the original declaratory statements of the Olivia, the Rabbit and the Hope, with the notation therein showing their being recorded in the county clerk and recorder's office of this county.

By Mr. SHELTON.—We object to each of these instruments on the ground that they are incompetent, irrelevant and immaterial.

By the EXAMINER.—I will mark the Olivia declaratory statement Defendants' Exhibit 13; the Rabbit No. 14; and the Hope No. 15.

(Witness continuing:) After the location of this ground by Merriman he transferred an interest in it to me, and this is the deed transferring that interest.

By Gen. NOLAN.—We will offer that in evidence.

By Mr. SHELTON.—It is objected to on the ground that it is incompetent, irrelevant and immaterial.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 16.

(Testimony of Louis Mason.)

(Witness continuing:) Kift and Knoyle attempted to repudiate the lease and bond they had given me. As a result of the lawsuit started and pursuant to the decree that was entered in that case, I got a conveyance of this Hornet property from them. I have here the deed that they gave me.

By Gen. NOLAN.—We will offer the deed in evidence, the same being a deed, Samuel Kift and Isaac Knoyle being the grantors, and Louis Mason and R. O. Merriman the grantees, conveying the Hornet quartz lode mining claim.

By Mr. SHELTON.—Objected to on the ground that it is incompetent, irrelevant and immaterial.

[76] By the EXAMINER.—I will mark it Defendants' Exhibit No. 17.

(Witness continuing:) Going back to the Point Pleasant claim, to my knowledge in 1890 there was a discovery on the claim, and prior to the 11th day of May, 1891, I sunk four shafts on the north side of that claim and three of them exposed the vein. I have worked on different places that were located that had nothing like as good a showing of a vein as this had, in different districts, and I should consider that sufficient showing to warrant a man to locate them and to prospect them further, and the samples offered in evidence here yesterday were fairly representative of the character of mineral that was exposed in those cuts, and I can take anyone and show him identically the same samples from those places, and in the shafts that were on that lead prior to May 11, 1891, I found mineralized matter resembl-

(Testimony of Louis Mason.)

ing in character the samples that were offered here in evidence. With reference to the Point Pleasant location, I sank four shafts in April, 1891; three of them exposed the vein and one did not. It was not sunk to bedrock. It was down only a distance of probably ten or twelve feet; all of them being on the same vein. The exposures on the Pleasant View were on a different vein than that exposed on the Point Pleasant, and it was situated two or three hundred feet further south. The next opening on the Pleasant View, besides the Hornet discovery made prior to May 11, 1891, was a little further south and west. It was upon the same vein as the Hornet discovery and showed a mineral-bearing rock that I would judge would run two or three per cent copper. In later years that shaft was sunk to a depth of about thirty feet. The reason I did not take out the mineral from these exposures and ship it prior to 1895 is that the ground was in litigation up to that time, between Mr. Kemper and his partners and myself and my partners. After 1895 when there was a settlement of that litigation, I obtained a lease and bond from my other [77] partners and we sank this shaft, known as the two compartment shaft to a depth of forty-eight feet, and timbered it with 8x8 timbers. At that depth we encountered water and could not go any farther, and I was not able to put up machinery, we had to quit. As a result of the compromise ten acres of the upper portion of the ground was deeded from Mr. Kemper's present location and right unto the quartz people. Immediately

(Testimony of Louis Mason.)

thereafter, there was a location on some of this ground, known as the Lynnie. The reason that I did not prosecute work with such flattering showings, was that the ground was in litigation, and Mr. Kemper applied for his placer patent. On the 11th of May, 1891, we enjoined him, and I was confident that I could not ship ore, because we would be enjoined, and it would be of no use to move machinery on the ground and go to the expense of setting up a hoisting plant, and undertake to ship ore until litigation was settled. In 1900 Merriman, myself and others run the Hornet tunnel, and shipped merchantable ore from that tunnel, and the various representations of the years from 1900 down, we drove tunnels and sunk shafts on the north vein and also exposed on that vein large bodies of merchantable ore. We were enjoined, I think, in January or February, 1901, by Mr. Kemper and his partner. Then they went to work and raised from the Hornet tunnel, put up machinery and sank a winze, as I am informed by Mr. Mullins and others, to a depth of two hundred feet on the ore body, and the ore body continued down and dipped south, and the stope came up right under the Hornet shaft. I said that we were enjoined by the Butte Land & Investment Company, and then they commenced to work and operate this ground, and shipped considerable ore—sulphides of copper. I encountered merchantable ore in the Hornet lead in 1901, and shipped it. That is the old Pleasant View ground. These are the returns that I got as a result of the shipments that I made.

(Testimony of Louis Mason.)

By Gen. NOLAN.—We will offer these in evidence.

By Mr. SHELTON.—Objected to as hearsay and incompetent. [78] The witness does not undertake to testify that he made the assays himself. The result of the assaying and sampling should be proved by the man who made the assay.

By the EXAMINER.—I will mark them Defendants' Exhibits 18, 19 and 20.

(Witness continuing:) The injunction issued in 1891 has been effective down to the present time, and it prohibited me from operating on the ground and shipping ores. Prior to the issuance of this injunction, I likewise uncovered merchantable ore on the northerly lead of the Point Pleasant ground. Coming on down to 1900, I found the same character of ore in the Rabbit, merchantable ore. I should judge that openings have been made along this lead for a distance of eight hundred feet or more.

I should judge that the lead encountered in the Pleasant View ground has been uncovered between 1800 and 1000 feet. I tried placer mining on this ground, I think in 1895.

Q. Did you yourself at any time make any test there for the purpose of determining whether this ground had any value for placer purposes?

By Mr. SHELTON.—Objected to as being immaterial and irrelevant. The purpose of the question has not been disclosed and if it is offered for the purpose of showing that the ground is not placer ground, it is not admissible for the reason that the placer patent is conclusive and determines conclusively that

(Testimony of Louis Mason.)

the ground is placer ground.

A. Yes, sir, I did.

By Gen. NOLAN.—The purpose of the evidence as is clearly authorized by the decision of the Supreme Court in the Clifford case and several others, not for the purpose of assailing the patent, simply for the purpose of showing, and as to the comparative values of the ground that it has no value at all as placer ground, and that presumably it was taken up for the quartz values which it contained.

(Witness continuing:) When we tested this ground, we failed to find a color or trace of placer gold, and I made this [79] test in the discovery made by Mr. Kemper.

Cross-examination.

(By Mr. SHELTON.)

I was not present when the corners were marked on the Pleasant View and Point Pleasant claims. I saw the notice at the point of discovery as it had been posted, but do not know who posted, except from what Mr. Passmore told me. I came in 1887 and shortly after that obtained employment at the Parrot smelter, and sampled ores for quite a while. The work that I did was simply handling the crushed rock, but I think I acquired a certain amount of proficiency in determining the value of ores. I think I could guess as closely as anyone as to the various kinds of country rock in the Butte districts. The district is considered to be a granite formation with the fissures of mineral bearing quartz cutting through this granite formation. Dykes or porphyry

(Testimony of Louis Mason.)

may be called country rock or vein just as you choose. In district like over at Radersburg you will find porphyry in gneiss. In my experience in mining I find to a certain extent rocks near the surface are more or less stained by the action of the elements on the surface rocks, but this is not the case in all districts. I did not sample any of the ore that I took from the north vein, nor any that came from the forty-eight foot shaft, marked No. 9 on the map. I do not remember if there was a wall there or not. While I did not have this ore assayed, I could judge pretty close what it would run anyway without assaying it. That timbered shaft was sunk in the vein matter. If you clean it out, you will find this green stain right in the bottom, green ore too. I found it from the time I got to bedrock continuously through. It is not on shipping ore. You find it in gold ore but not in copper ore very often, but sometimes even in copper. Shaft No. 3 on the map here is filled up and I did not get any samples from it. In the shaft that is situated about ten feet from the north side line of the Butte and Boston Placer about twenty feet from the Rabbit location [80] there is such ore. That is called the timbered shaft. The ore in the timbered shaft is mixed with vein matter—mineralized quartz. The vein there is different from the country rock. It is closely massed. By speaking of reaching bedrock, I mean when you pass through the fill which has accumulated on the surface of the rock formation of the earth. Some places there is such a fill, and in others there is not. There

(Testimony of Louis Mason.)

is such a fill on the Butte and Boston placer, it being about sixteen feet deep. I think that on the upper part of the Butte and Boston placer, you will find that the rock reefs up and will continue down without finding any fill. I should judge it is bedrock until such time as it is demonstrated whether it is or not. From the northwest side down to the Pitts-mont fence, the bedrock is within four or five feet of the surface. As to the depth of the wash from the Pleasant View, Passmore had his shaft sunk to a depth of twenty feet, and on the north of that there was a body of quartz in the bottom, and it was never all taken out. I cannot say that it is not bedrock or that it is. I would not say until it is demonstrated by development work. There is a great difference within a short space there of the depths of wash. Float is what all miners or prospectors call mineral bearing quartz or ore not in place. Rock in place is the rock you encounter when you pass through the fill and come to what is the surface of the rock, and float would be quartz that had been removed from that place to some other place. With the exception of the reef of rock on the upper end of the Butte and Boston place, there were no veins exposed there. I testified in the litigation, concerning a portion of this ground in 1901, that I became acquainted with the quartz locations in 1891. That is not relative to my going over the ground in 1887, 1888 or 1889.

By Mr. SHELTON.—I will ask you if you testified as follows in that proceeding: “Q. You are one of

(Testimony of Louis Mason.)

the defendants in this case? A. Yes, sir. Q. You have heard the description given by the witness [81] Mr. Knight, as the location of the Butte and Boston placer. A. Yes, sir. Q. And you know where the stones are which mark the boundaries of the Butte and Boston Placer. A. Yes, sir. Q. When did you first become familiar with this location? A. Since 1890 or 1891, I should say."

(Witness continuing:) If it reads that I became acquainted with the location in 1890 or 1891, I did so testify. There was a body of quartz at the bottom of the shaft in the Pleasant View discovery. I could not state whether or not it was in place, because there was not sufficient development done. I stopped sinking on the Hornet for the reason that it was not necessary to go any deeper under my agreement, and I wanted to do the work as fast as I could, and develop as much as I could under my contract, and the more places I opened the better I could determine. I never tried to prevent Mr. Kemper from going down in the Pleasant View discovery. He came out there with Mr. Wilson, and I talked with the latter about that, and he said: "Lou, it is not necessary to object, because Mr. Kemper can get an order from the Court and go down in that shaft any time he wants to." Mr. Kemper did go down and dig out some of the quartz that I spoke of, but he did not dig it all out, and I did not come to a conclusion that there was any vein in the discovery. In the previous litigation I testified: "I did not consider that Pleasant View location any good until last

(Testimony of Louis Mason.)

—this month—it was when, it was cleaned out and sunk down eighteen inches or so deeper, and showed that it was not a regular vein, but a body of quartz that was deposited there, and then I came to the conclusion that there was no lead there in sight.” That was my opinion; but I still say if you follow that body of quartz eastward, if it continued there, it would show the cropping or earmarks of a vein. I became acquainted with this Pleasant View discovery about April 16, 1891. With the exception of some old diggings on the upper end of the ground, the [82] Pleasant View discovery, Point Pleasant discovery, and Mr. Kemper’s shaft, there was not any other opening there of a similar kind. The Point Pleasant discovery was within the limits of the Pleasant View, but outside of the Butte and Boston placer indicated on the map at the point “A.” The locations of the Point Pleasant and Pleasant View claims, as shown by the record, were made prior to the placer location. It is upon those locations that Mr. Passmore, Judge Hamilton and myself base our claim to the Pleasant View and Point Pleasant claims. When I acquired my interest in the Pleasant View, I undertook performance of the development work and hired two men in the year 1891. My contract called for one thousand dollars’ worth of work. Eli Rae and Grant Pore worked with me. I fix the time when I finished working on shaft No. 16, by reference to the date I paid Mr. Rae off for his labor on the 10th of May, 1891, and he went back to Indiana. I think that we

(Testimony of Louis Mason.)

sunk shaft No. 16 down ten or fifteen feet deep before he went away, and that we got to bedrock. We sunk the Hornet shaft prior to the sinking of the 16 and 10. Shaft No. 1 is sunk about fifteen feet. Shaft No. 2 ten or twelve feet; No. 3 was sunk in latter years. I sank a shaft about ten feet south of the north side line of the Butte and Boston placer, and about twelve or fifteen feet from the Rabbit discovery in 1891. Then I sank a little shaft just over the line about eight or ten feet deep. That makes five shafts on the Point Pleasant claim, and this fifth one is over the line of the Butte and Boston placer. Then I went to the Hornet and sank that thirty-five feet deep. The next one I sunk, I think, is number 10. I sunk No. 17 at a later date. No. 10 is in the neighborhood of thirty feet. Sixteen was about ten or twelve feet deep prior to the 11th of May, 1891. I began my work on the north side in April. I don't know how many shafts I sunk in April. Later on I sunk shaft No. 16 deeper. I sunk the Hornet the first part of May to a depth of about thirty-three feet. I am quite sure that shaft No. 16 was sunk at least ten feet deep before [83] the 11th of May, 1891. In my testimony given at a former trial, I said that I began work on the 10th day of May, and now I say that I paid Rea off on the 10th, and to the best of my knowledge on the 10th I had that shaft down to a depth of ten or twelve feet. On the 11th of May, 1891, the only openings on that ground were the Pleasant View discovery, the shaft sunk by Mr. Kemper, and these eight shafts that I have named,

(Testimony of Louis Mason.)

with the exception of some openings made a long time prior to that, which had been partially or very nearly all filled up. If any vein was disclosed on this ground, it was disclosed in one or more of these openings that I opened in April or May, and also on this cropping of the rock in the ground. To the best of my knowledge, shaft No. 10 had been sunk prior to the 11th of May, 1891. There is rock disclosed in shaft No. 10, and I should judge it would carry two or three per cent copper, judging from assays I have made. I would hardly call it a vein, but indications of a vein are very good. Indications were sufficient to warrant going further with it. I said there was a vein in the Hornet shaft. Mr. Knoyle dug a drift twelve feet from the bottom of the Hornet shaft. There are two lines of oxidized vein matter run east and west in that drift. It is hard to say whether there is a wall yet or not. The hanging-wall may be a wall farther south. In this drift you encounter quartz and vein granite. The kind of material encountered in the cross-cut or drift at the bottom of the shaft is a very fine grade of ore, of which I have some specimens here, from this point, and there is also vein granite mixed in it. This cross-cut or drift runs into a stope which is in the vein—in the same vein—because the hanging side of this stope, I consider, just as good ore as was shipped out; it looks just as good to me. You will not find clearly defined granite walls in that stope. If the Judge of this court were to go down the Hornet shaft, he would be able to see there just

(Testimony of Louis Mason.)

what I saw in 1891, and I can show him a lot of good ore right in the walls of that shaft. Commencing [84] at the surface of bedrock, this ore begins. On the south side is the stope, on what we call hanging-wall of the vein, there is a crevasse—a crevasse in pay ore. I do not consider that a fault fissure. I have offered in evidence returns of shipments of ore, one of them is out of the north shaft to about eight or nine feet north of the north shaft, and then the tunnel was run after those two shipments. I did not get that ore from what is called the fault fissure. I do not consider it fault fissure. There is no such thing as a vein without a fault. There has to be a fault in country rock or you cannot get a vein. That is my opinion. There is a question in my mind whether the main Hornet tunnel was the footwall or not, but there is a wall there that corresponds to the footwall, but in all large veins in Butte and large stopes where I have worked I have found various walls running with the vein, separating high grade ores and low-grade ores. I have had some experience in placer mining in that I have been to placer mining camps, and have panned for placer gold in various camps. I know that the Pittsmount ground was held under placer title, but it is a question whether you can get any placer gold on the ground. In 1891 there was no work being done on the Bullwhacker or the Birtha or the Copper Queen. No ore was being hoisted at the Pittsmount in 1891.

I have heard that the depth of the fill on the Pittsmount is about five hundred feet. My own informa-

(Testimony of Louis Mason.)

tion, as to how far east the veins in the Pittsmount ground extend is what the men I have worked with on this ground have told me. As to other claims in that immediate vicinity, directly south of the Bullwhacker is the Maggie quartz lode mining claim. Directly south of that is the Montgomery quartz lode mining claim. Then comes a narrow strip of land running up Horse Canyon, as the Park Placer. As to whether or not there were any openings except the Pleasant View discovery before the 11th of May, 1891, west of this line [85] which is marked south twelve degrees east six hundred feet, Mr. Kemper had shafts west of that marked "K." Also I started and sunk a shaft to a depth of ten or twelve feet in slide—fill; also, the discovery of the Pleasant View. I don't remember that I had any other shaft at that time.

Redirect Examination.

(By General NOLAN.)

The testimony that I gave in 1901 was adduced upon a hearing where the injunction proceedings were involved. After giving that testimony, it was not submitted to me for review or correction. My attention has been directed to a portion of the evidence I gave at that time found on page 44. At the same time and on the same occasion I testified as follows:

"Q. Did anybody help you in sinking the shaft No. 1? A. Yes, sir.

Q. Who was it?

A. Eli Rae and Grant Pore, and another party.

(Testimony of Louis Mason.)

Q. And you were working at that time for yourself and Mr. Passmore?

A. Myself and Mr. Passmore, and others who had an interest in the ground.

Q. That is, you were in the employ of the owners?

A. Yes, sir.

Q. And that was representation work?

A. Yes, sir.

Q. For what year?

A. Well, I was to do as much work for my interest the ground.

Q. Was this intended for the representation work 1891? A. Yes, sir.

Q. Then the shaft No. 1 was part of the representation work for 1891?

[86] A. Because it was considered as representation work.

Q. Well, what other work did you do?

A. After that I came up here (indicating) and I followed that lead here; that is that (indicating), a distance of sixty or seventy-five feet, and then I sunk again on the same line.

Q. What is this here (indicating)?

A. That is a discovery shaft.

Q. Is that where you sunk the second discovery shaft?

A. No, sir, that is out here (indicating). That would be east of the Olivia discovery shaft. I will mark it No. 2, and which is about twenty feet east of the Olivia discovery shaft, and is from eight to ten feet deep.

(Testimony of Louis Mason.)

Q. You are sure it was not deeper than that?

A. Oh, it might be a little deeper, but something in that neighborhood, of eight or ten feet. I don't remember. That is as near as I can remember.

Q. These two gentlemen helped you sink the No. 2 shaft? A. Yes, sir.

Q. And it was done for the purpose of representing the ground?

A. Yes, sir, and for the purpose of getting my interest in the ground.

Q. Did you find a lead in No. 2 shaft? A. Yes.

Q. You found a lead in No. 1? A. Yes, sir.

Q. State whether or not at the time you found it, you informed Mr. Passmore and Mr. Hamilton of the fact that you had found a lead.

A. Yes, sir. Mr. Passmore came and examined it.

Q. Did anybody else examine it?

A. My brother was out there, and Mr. Dean, and other parties, when I completed the shaft.

[87] Q. When did you complete the shaft?

A. And then I followed up—I forget whether it was just below where I sunk the third one down or not, but I should say it was a short distance above here, I think about a hundred feet (indicating), the No. 3, and then I sunk by mistake over on this other claim.

Q. Is this No. 3 over on the other claim?

A. No, I don't think it is. I found a lead out here also, and that was over on the other ground.

Q. That was shaft No. 4?

A. Yes, that was on the Copper Queen.

(Testimony of Louis Mason.)

Q. Put a mark where you sunk No. 4 shaft.

A. (Witness marking figure 4 where shaft No. 4 was sunk.)

Q. How deep was that?

A. I don't know. I do not remember. It was over ten feet, eight to twelve feet down—it was not over twelve.

Q. You also notified Mr. Passmore and Mr. Hamilton of what you found there?

A. Yes, and Mr. Passmore examined it.

Q. Are these shafts all in the same condition they were then? A. Yes, sir.

Q. Haven't changed any?

A. No, sir, no work was done. They are filled up some, filled up quite a bit, and this was excavated.

Q. And where was the next?

A. I came over this way (indicating) and went to work.

Q. Now where is that?

A. That is about one hundred and sixty or seventy feet, something like that, from the north line of the Bullwhacker claim.

Q. How far was it from the shaft marked here "Hornet discovery"?

[88] A. Well, that is the shaft itself.

Q. You will mark it No. 5.

A. Yes, I will mark it No. 5.

Q. And what did you do there?

A. I sunk that shaft down to about twenty-nine or thirty feet. There was a windlass on it.

Q. Who assisted you in that?

(Testimony of Louis Mason.)

A. Grant Pore and Eli Rae. That was done between the 1st of May and the 10th of May, when all the parties that was working for me there, I paid him off, and I think it was on the 12th he went back east."

(Witness continuing:) When I found my time-book I found it was marked the 10th, and I think you will find later on where I presented my book. As to placer locations, to which my attention has been called, existing continuous to this ground, was the Mayyough claim. I have known that claim and passed over that ground from 1887 up to the present time, every year at a different time. There had been no placer mining operations carried on this ground that I ever saw or heard of. I never saw any placer mining done on the east side in that district. This Mr. Gillis that I spoke about is a mining man. He has been up to my ground and examined my workings and was favorably impressed with the conditions existing, and I think I gave him an option on it once. Speaking of walls and veins, I have worked in a great many veins, and I do not find all rich mineralized matter in the vein. There are bodies of rich ore and the vein will widen out and be rich and then narrow up and the ore will be rich in places and less valuable in other places. It is not essential that the matter be mineralized to constitute a vein. My attention has been called to different kinds of rock, quartz, albite, granite and porphyry. If there is porphyry in the vein mineralized so as to make it valuable that would be vein matter, and as to granite

(Testimony of Louis Mason.)

in the veins in this camp, you find the walls mineralized. Mr. Murray [89] owns the claim, I think, where they mine the granite, just such granite as you have over there; that was right there, very rich in silver and paid a good profit. I saw the ore and saw the silver in the granite. In the vein that is encountered in the Hornet discovery and also in the drift run from the west to the north, there is quartz and copper and vein granite. I consider it lead matter—vein matter. It exists in that drift solidly to the end of the drift, extending from the Hornet shaft a distance of about ten or eleven feet. I do not think that that material which you encountered in that drift there is country rock, mixed with some foreign material mineralized. That rich mineralized material referred to by counsel is all through the rock in various large veins in Butte. You will find no vein at all, and you will get down three or four hundred feet before you find one-seventh of the material that you find there. Bearing in mind my experience as a miner, I have not seen any where in this Butte district a showing so near the surface as exists in that Hornet shaft, and experienced miners and men that hold good positions in Butte have examined it a little and say it beats any showing that they have ever seen in the camp. As I understand the term “wall” it is a separation or a talcy seam running through the country in a vein and there might be one, two, three or a dozen walls, between the real country rock on the hanging side of the vein and the real country rock on the other side of the

(Testimony of Louis Mason.)

vein. In every fissure vein there is a true footwall and a true hanging-wall. In this district in fissure veins where there is a vein of any considerable size sometimes in the vein matter itself you find a cleavage resembling a wall; sometimes you will find several of them, separating different grades of ore where you have different stopes. In my opinion, such condition surely existed in the Hornet shaft and in this drift running to the west. The winze, some little distance removed from this Hornet shaft, goes down from the main Hornet tunnel about thirty-five feet, I should judge, east of the connection from the main Hornet Tunnel through the Hornet [90] shaft. The reason I said I did not think that was the hanging-wall disclosed there was because the connection from the main Hornet tunnel to the Hornet shaft I find this character of ore through the formation and at the bottom of the Hornet shaft and the connection there northerly back to the stope beneath the main Hornet tunnel I find the same ores in connection there. There is a crevasse or break in the ore through this hanging-wall immediately west of the winze. Getting beyond the line of this hanging-wall, the vein matter still continues, as far as it is open. As to complainant's contention, that the hanging-wall is exposed in the winze, I will say that I consider it is not, and I can take the hanging-wall, as it is there today, and ship it and make money out of it, I am confident. It is open to inspection. Anybody can see whether I testify wrong or not; they can go look

(Testimony of Louis Mason.)

at it. The openings on the ground there for a distance of six or seven feet on each of these claims enable me to give the strike of the lead. I consider that the shafts that I sunk in 1891 exposed a good vein on the old Point Pleasant. I was asked about the Bullwhacker claim. I will say that there has been a great deal of ore shipped from it, several thousand dollars worth. The character of the ore was such that the parties who mined it made money out of it. The people operating that mine had to stop because their lease ran out, or was taken from them. They were making money when they quit. I worked the BIRTHA claim during the time it was working, and I have personal knowledge of the shipment of paying ore from that property. If I were not enjoined from doing so, I could operate those two leads on my own property at a profit right now. Speaking of faults, there is no such thing as a fissure vein, in my opinion, without a fault in the formation of the country. If there is no fault, the country is all granite or all porphyry or whatever the country rock is. There has got to be a fault before there can be a vein in my opinion. In almost every mine in Butte, there is sometimes a displacement of the vein. Take it in the vein [91] as exposed over in the Hornet shaft, in one place probably the right streak of iron strain which lies along this rich body of ore is separated about a foot. (Indicating.)

Recross-examination.

(By Mr. SHELTON.)

I testified that at the bottom of the shaft of the

(Testimony of Louis Mason.)

Pleasant View claim and on one side there was a body or reef of quartz at the one side and along the bottom, and that it would require additional work to say positively whether it was a vein or simply float. I testified at the former hearing that this quartz existed on the north side of the bottom of the shaft. There is granite in that vein, and I found it in the largest veins in Butte I worked in. Take it in the Anaconda mine, in a true fissure vein, you will find some places there is mineral for a long distance, and it would be difficult to tell which is the foot and which is the hanging-wall. The granite that forms the walls of the vein is sometimes quite mineralized. In this particular case in the tunnel, the surface of the bedrock is not very much broken up or disintegrated. In the upper cross-cut towards the tunnel running from the Hornet shaft, you might break down the wall on either side, but I have seen it where it is just as loose and more than a thousand feet underground. It is solid and clear in the cross-cut eight or ten feet below that. Water will percolate through broken rock at any great depth, and it will circulate more freely. I testified a while ago you would find the footwalls of the country rock adjoining rich ores, sometimes, mineralized, but this is all vein matter on the bottom, and the connection you speak of between the Hornet tunnel and the Hornet shaft, if it is in place, it is solid and not broken up. I have worked at various places at short distances on each side of this vein, and I find altogether a different kind of formation than you would find in this

(Testimony of Louis Mason.)

cross-cut from the Hornet tunnel to the Hornet shaft. The Vesuvius—I will take you sixty feet south from the Fraction shaft, and you will find altogether different formation from what you find in the [92] shaft. You could not ship ore carrying two per cent copper to the smelter and make a profit out of it, but if the assay showed that this material carried sixty per cent copper, then I would call it ore, and I can get it right out there, and if the court will give me until tomorrow night, I will bring up several sacks taken out of that cross-cut. In my estimation, either of those veins on May 11, 1891, would warrant a man to mine, to drift or to sink on it, and to develop it.

Redirect Examination.

(By General NOLAN.)

In connection with the shaft to which my attention has been invited, sunk in 1895, there has been a tunnel run since then, starting in about two hundred feet, I should judge, west of the shaft, and running easterly to probably within thirty feet of that shaft. I consider that there is pay ore in that tunnel, and I could develop a good mine if I had sufficient money to do the work. If I had sunk and cross-cutted over to the general work in sinking down a vertical shaft, the vein tapping to the north, you would gradually leave it in time—pass out of the vein, and if you sink to the depth of one hundred feet or so, then it would necessitate a cross-cut to reach the vein. As a general rule, in copper mines, you have to go some depth before you strike values.

[Testimony of P. C. Dean, for Defendants.]

[93] P. C. DEAN, a witness duly called and sworn on behalf of the defendants, testified as follows:

Direct Examination.

(By General NOLAN.)

My name is P. C. Dean. I have lived in Silver Bow County since May 13th, 1887. At the present time, I am a prospector and miner, which business I have followed since 1893. I know the ground in controversy. Before 1893, I had seen leads and had given attention to the geological formation around Butte, but I have not been interested in them to the extent I have been since 1893 since I have taken prospecting on my own hook. Copper in rock manifests itself by specific gravity. I am the brother-in-law of Mr. Mason. I have been over the ground covered by the Butte & Boston Placer, several times and after Mr. Mason became interested, I have been over there with him different times while he was working it. That was in 1891. I think it was in the fore part of the year 1891, that I made an examination of the working on the Point Pleasant and Pleasant View plain. When I examined these claims, I went down in those little shafts that Mr. Mason and Mr. Poor were working on. I believe they were called the Point Pleasant and Pleasant View, at that time. My opinion at that time, was that these shafts were on separate leads. It was in the early spring, perhaps prior to the middle of April, 1891, that I was

(Testimony of P. C. Dean.)

acquainted with the ground, represented by the Point Pleasant and Pleasant View locations. At that time Mr. Poor and Mr. Rae were working there. At that time, I noticed that there were openings on the leads. The shaft on the southerly lead, that I went down into, was a shaft now known as the Hornet shaft. I have been over the ground recently and have worked there a great deal up to about four years ago. At the time I was down in the shaft, it was about 18 feet deep. On the upper lead, the openings seemed to be fresh workings. I still think there was a lead at that time. At that time I noticed that there was ore on the dump at the so-called Hornet shaft, which looked like very good copper ore, to me, what we term Red Oxide and Carbonite.

[94] Q. And in the light of your experience now and referring to the condition then, and also referring to the character of the ore that you saw on the dump there, what would you say as to whether a mining man looking for quartz locations would be justified in locating the ground and prosecuting work on it as a quartz claim?

By Judge BOURQUIN.—Objected to on the score as incompetent and being indefinite as to time. Justification now under conditions now would not tend to show justification in 1891, unless conditions were shown to be alike.

A. Why I would say it was a prospect that would justify most any man if he was looking for a good prospect of making a location and prosecuting work on it. I will say that I have seen very few that would

(Testimony of P. C. Dean.)

seem to indicate better at the surface, in my prospecting.

(Witness continuing:) I was on this ground the 19th of this month and went down into the shafts and tunnels there, for the purpose of ascertaining the present situation as to the extent or nonextent of the lead. I went into No. one shaft and No. two shaft, called the Olivia Discovery and then I went into the little shaft called the Timbered shaft, also went into the Rabbit Discovery. Likewise into No. nine and into the cross-cut of No. nine, down twenty-odd feet, and then I went into the tunnel, a short distance west of that point a little bit south of it, designated on the map here as No. 31 tunnel. I went into what is called the Hornet tunnel No. 34, and into tunnel No. 4; then went into the cross-cut from that tunnel to the Discovery shaft, went down the Discovery shaft to the bottom of the Hornet Discovery shaft. Then I went westerly in a drift, came back to the shaft, and went northeasterly in a cross-cut, connecting what would appear to be a raise underneath the Hornet tunnel. In the No. One shaft, which appeared to be about 18 feet deep, there is a black sulphite of copper in the bottom of that shaft, in my opinion. I saw lead matter in the bottom of the shaft, to the north side of the shaft and apparently inclining to the north. I obtained a sample of this sulphite of copper from the bottom of the shaft and have it here. I did not test it for quartz but some of the pieces seem to be quartz from the hardness. It might be lighter quartz, but its present hardness

(Testimony of P. C. Dean.)

is not sufficient to justify my announcing [95] it to be quartz.

By General NOLAN.—We offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 21.

Q. With that material exhibit 21 in evidence there in that shaft as you saw it, would you as a reasonable mining man, be justified in prosecuting work upon it as a quartz claim?

By Mr. SHELTON.—Objected to for the reason that the question relates to the present and is therefore immaterial. The question is whether it would have justified exploration on the 11th day of May, 1891.

A. Yes, sir.

The WITNESS.—I saw Mr. Stevens go down in No. two and get some rock down there, and I have a portion of it here which I would call quartz. I would not say that there is considerable metal in it. I would say that it is quartz.

By Gen. NOLAN.—We desire to offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 22.

(Witness continuing:) Over there, I went to the little shaft close to the dump on No. Nine, which I believe is termed the Rabbit Discovery, it being northwesterly of the No. 9 shaft. I have a sample that was taken from right by the windlass, there being no ladder or bucket or means of getting down.

(Testimony of P. C. Dean.)

By Gen. NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 23.

The WITNESS.—As a miner, I would call that sample copper ore. I did not notice whether there was a large quantity of this ore on the dump. I saw some of it. In 1900, I was leasing near there; I went down in this same place at that time and gouged out a great big boulder that would weigh sixty or seventy pounds, which resembles in character, the sample I had just produced, exhibit 23. If anything, it was better; it contained some of the red oxide. This boulder appeared to be in place in the lead. Much from the knowledge that I have of the same kind of rock over there, having worked at lead in it, I would say that it would be good for 34 per cent copper.

By Judge BOURQUIN.—Object to that. The witness has shown no qualifications for expressing an opinion from the appearance of the rock and it is incompetent.

[96] (Witness continuing:) I went down into No. 9 shaft and found a lot of lead matter and then went down into a little cross-cut at 22 feet, I should judge, and obtained a sample of the ore that was there which I have here. It appears to be lead matter and has some copper in it. As I saw it down there, it was in place forming a lead.

By Gen. NOLAN.—We offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 24.

(Testimony of P. C. Dean.)

(Witness continuing:) From there I went a short distance down the hill and went into a tunnel which in its cross strikes a lead, which has the appearance of this lead matter and I cannot say positively that is the same lead. I obtained a sample of the lead I found in that tunnel. Portions of this sample we took of a cross-cut about 25 feet long, varies a little west of south and then we went out and went in the main tunnel and went on further northeast, something like fifty feet and we came in contact with the lead again and followed that vein for a distance of about fifty feet. That tunnel is No. 31. There was a sample taken from the Rabbit tunnel and a cross-cut which is a fair sample of the ore body as it existed there.

By Gen. NOLAN.—We desire to cover that in evidence.

By EXAMINER.—I will mark that Defendants' Exhibit No. 25.

(Witness continuing:) I would call that copper ore. In some of these pieces there is what we call Red Oxide of copper, very pure copper, I should judge. If one got rid of the waste, out of it, I think it would come near 86 per cent. I should judge that the pieces itself, could have 30 per cent copper. All these samples I have shown here this morning appear to be from the same lead. The strike of the lead from which these *samples taken* is an easterly and westerly direction. We obtained some samples from the so called Hornet Discovery lead about ten or eleven feet above the bottom of the Hornet shaft.

(Testimony of P. C. Dean.)

This is a [97] fair sample of the material in the tunnel. It was taken at different places in the tunnel and contains copper. A portion of it is rich in copper, most of it is not. Some of these pieces which constitute this sample also have some of this red stuff that I have already spoken of as being very rich in copper.

By Gen. NOLAN.—We desire to offer that in evidence.

By EXAMINER.—I will mark that Defendants' Exhibit No. 26.

(Witness continuing:) The sample that I took was from a cross-cut in the Hornet shaft within about 16 inches of the bottom. I think this sample is a fair sample, it having been taken from different points. I would say that this ore carries copper. One piece here is very rich. It is merchantable. I would say that the pieces constituting the sample would go over 20 per cent in copper.

By Gen. NOLAN.—We desire to offer that in evidence.

By EXAMINER.—I will mark it Defendants' Exhibit No. 27.

(Witness continuing:) There are plenty more samples left yet. We next took a sample right near the bottom of this, 14 or 16 inches on the south side of the Hornet shaft which fairly represents the mineralization of the ground there. I would call it a talcy lead matter. I would call it vein matter, it is not ore. It has the appearance of being of the same material as you find in the lead. We sometimes call

(Testimony of P. C. Dean.)

it the blossom of a lead or lead matter.

By Gen. NOLAN.—We desire to offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 28.

(Witness continuing:) I obtained my next sample in a cross-cut connecting with the raise under the main Hornet tunnel, running northwesterly. It was along the tunnel from both sides. You will find ore all through that cross-cut. This cross-cut is about eleven or twelve feet below the cross-cut running from the tunnel. There is ore showing up in the roof in different places as well as [98] on either side. This lead matter is possibly a distance of about 25 feet I should judge from the Birtha cross-cut to the shaft from the main tunnel. This sample was picked along in different places. It is a fair sample of the mineralization of that portion of the ground. Most of these samples contain copper, some of it a very small percentage. The red stuff in these four pieces that you now saw is Red Oxide of copper. One of these pieces would go over 65 per cent, the others not quite so much. As to the red stuff itself, I never had but one assay from that and that went 86 per cent. It is pure red matter. The red stuff alone in these four samples I think would go 80 per cent or over in copper.

By Gen. NOLAN.—We desire to offer that in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 29.

(Testimony of P. C. Dean.)

(Witness continuing:) This lead matter that you encountered in the Hornet shaft appears to be the same that you encountered in a cross-cut out from the tunnel to the shaft and in cut running from the bottom of the shaft. I was present at some time in 1893 or 4 or 5, and a conversation took place between Mr. Kemper in reference to this ground. Mr. Kemper came to the smelter to find Mr. Mason. I took him down to the Reverberatory furnace where Mr. Mason was working and we had to walk around the furnace and we came up right suddenly to him and of course I was right with Mr. Kemper at the time. Mr. Kemper spoke to him and he said, "Louis, I have come down to see if we could not effect some kind of a settlement or compromise relative to that ground over there," and Mr. Mason said, "No Kemper, we have got to get a showing," and Mr. Kemper then said, "I know you have some good ore over there, Louis, but you cannot win." These were the words exactly as near as I can recollect. I testified before of this matter in a trial that took place I think, in 1901.

[99] By Mr. NOLAN.—I will ask you whether or not at that time and at that trial, this question was not put to you and you did not answer as follows.

By Mr. SHELTON.—That is objected to.

"Q. Did you know what this conversation was about in relation to the compromise?

"A. It was in relation to the Butte & Boston Placer in the shaft that Mr. Mason had sunk and worked on. He had been over there. I do not know

(Testimony of P. C. Dean.)

which shaft he referred to but he said, 'I know you have some good ore there.' That is all he said."

To the best of my recollection at this time, that question was put to me and I made that answer.

Cross-examination.

(By Judge BOURQUIN.)

I think that was in 1901 at the Parrot Smelter.

Q. I will ask you if you did not testify as follows at a hearing, stating that you found Mr. Mason with Mr. Kemper? Page 201. "A. He (Kemper) says, 'Mr. Mason, I came down here to see you about this ground over here, to see if we cannot effect a compromise,' and Mr. Mason says, 'No, it is looking too good, I cannot offer you a compromise,' and Mr. Kemper says, 'Well, you have got a little ore there, but you cannot win, there is no chance for you to win.' " To the best of my recollection I have so testified. I could not say whether I testified to the following or not: "I do not know which shaft he referred to but he said, 'I know you have some good ore there,' that is all he says." "That is all he said" had reference to the particularizing of the shaft. When I left the Parrot Smelter, I went to Deer Lodge County. Part of the time, since 1894, I was writing life insurance, part of the time I worked in a mine, part of the time, in Deer Lodge County, prospecting. During the years I have been prospecting, I have located a great many claims, some in the vicinity of Elliston and Avon, what is now called Ophir. I have located some in the vicinity [100]

(Testimony of P. C. Dean.)

of Columbia Gardens. I have located a great many in the vicinity of Graham Gulch and Ohio Gulch. The next prospecting after that, I believe was in the vicinity of Iron Mountain, about sixty miles westerly of Missoula, in the fall of 1898, I think. Next work that I did was locating the Faction, which I believe was called the Vesuvius, about 1900 or 1901. It lays easterly from the central portion of the Butte & Boston Placer. I believe I represented that six or seven years. I turned it over to Mr. Mason. I prospected a locality next, in the vicinity of Graham Gulch, where I now live. I located a great many claims there and abandoned some of them. I have been out there about four years now, steadily. I do not confine myself wholly, to working my own claims, but sometimes work for others. I have located two claims this year, in the Highland country. The summer before that, in the vicinity of Graham Gulch. I have been related to Mr. Mason as his brother in law about twenty-six and one-half years. While working at the Parrot Smelter, I had to take work where I could catch on, sometimes in the calcide furnace, sometimes in the converter room, sometimes in the matte furnace, sometimes in the concentrator. It did not require me to be a judge of ores, no more than my own interest that I took in trying to be able to qualify myself for judging ores, and in that connection, I studied "Peter's Copper Smelting." I said that I studied the geological conditions of the district, but I did not go into the technical portion of geology. I first went over this ground sometime

(Testimony of P. C. Dean.)

in 1887, in going over to the Gardens. I always walked over there. The first I particularly noticed this ground was a very short time after Mr. Mason got into it. He may have worked there some odd times, but he was working steadily at the Parrot Smelter, and during that time he had different parties working on the ground in controversy, among them, Mr. Pore, Mr. Rae, and Mr. Dan Jones. [101] I had no personal interest in the ground myself. I had charge of the representing over there two years and at other times I worked for Mr. Mason, with him since 1902. What is called the Hornet at the present time is the only opening that I can absolutely identify as being there in 1891, on account of the various changes that have taken place in the surface of that country. Mr. Pore was working there then. There was a windlass up. At that time we saw copper ore in the shaft, more particularly on the west, east, and north sides. I could not say whether or not I knew the lead in 1891. I think that I did. I may not know the lead now. I could not say now that there was a lead exposed in that shaft at that time. I do not think I saw anything in the shaft in the way of a wall. I went down the Hornet shaft the 19th of this month. There are some vein matter—ore—on the east side. The base of the matter is granite, a portion of it contains mineral. Some of it is of different grades, some of it might be called mineralized granite and some of it pure copper. Pieces of copper rock are scattered around there so frequently that it has become a pay-

(Testimony of P. C. Dean.)

ing proposition to take it out. I do not always speak of granite rock which contains some mineral, as vein matter. I do not know how this mineral came there. I did not see there what would be termed a true wall. In the main tunnel, you have what might appear to be a tunnel, what might be termed a hanging-wall. In the main tunnel in various points, you find the mineral extending beyond them in the form of copper, Red Oxide of copper which is as near pure as you can get it. The copper is not evenly disseminated through the walls of granite but appears in spots and patches. It continues all the way across that cross-cut. The vein on the north side appears in some places as much as four feet, in other places, twelve inches. In the back of the main tunnel, different places it appears from four inches up. There is probably a footwall on the north side in that vein. [102] It looks like it. It is the only footwall I know of there and I do not know of any hanging-wall. All the samples that I took are in evidence here. I think I took them on an average of from two feet from the cross-cut from both sides. I think that they were fair samples. There are different degrees in quality. I did not take it from places that I consider most valuable. This sample 26 is ore. I call it ore because it is the same kind of rock that I have shipped from that neighborhood. I could not say how much of the entire cross-cut from the tunnel to the Hornet shaft is the same as Exhibit 26. It is all over the sides. It is a solid body that is all mixed through it. It is all lead and is all of

(Testimony of P. C. Dean.)

the same character. I would not swear that the stratas are perpendicular or horizontal, and I believe I would be justified in saying that you can find them in any direction. It could be lead matter without being between walls in the form of veins. There is ore on the south side of the shaft below that cross-cut, the same as on the east side. I would not say that sample 27, which came from the east, north and west side of the Hornet Discovery is better than the average. Matter occurs all through the three sides, of the same character as Exhibit 27. It is of ore. I brought that sample here for the purpose of showing to this court, that this character of ore occurs in that shaft all though. By all through, I mean that it is from the cross-cut down from within about sixteen inches from the bottom of the north, east, and west sides. Exhibit 27 is not what we would term a sample made to check by. This is copper ore, green copper—Red Oxide of copper. I found in that shaft what I would term Black Sulphite of copper. I picked this sample Exhibit 28, out of walls. It was solid in place. I would not call that ore, I would call it vein matter. It looks like it had been influenced by the same conditions that had produced tale. I took a portion of it from the east side and from the south side. It was [103] taken indiscriminately from the height of sixteen inches, the entire lead was taken on the south side. There is no line of demarcation that I could discern to which this is segregated from the east side from the matter above. I do not think it is two feet wide. Next sample that

(Testimony of P. C. Dean.)

I took was in the cross-cut in the bottom of the Hornet shaft, northeasterly. I took it indiscriminately without any degree of frequency. Matter in that cross-cut is ore and I believe that my sample Exhibit 29 would be a pretty fair average. You will find plenty of the same stuff, there. Exhibit 21 is vein matter but I could not say if it is decomposed granite. I would call this Exhibit 29 ore, copper ore, with probably some silver. The entire cross-cut is of this matter. Red Oxide appears quite often in all this cross-cut. It occurs in spots. I did not see any connecting link by way of a fissure or ore, from one spot to the other, and I have no theory about how it was formed there. I will say that I have no definite theory as to how the veins in this district are formed because the authorities differ on that point. Some claim that the deposits of the mineral in veins, come by ascending vapors and some, descending solutions, but I could not say, I am not posted. The lead matter in the shaft in the cross-cut and tunnel is not all alike. There are different kinds but still it is of lead matter. At this time I did not follow the workings of the tunnel—No. 34, under Defendants' Exhibit No. 1, clear to the end. I have done it. It averages about three feet in width. The first time we encountered the veins in tunnel No. 31, on Defendants' Exhibit No. 1, was in this cross-cut. Something like about four or five feet from the end of it. As to its size it appeared to extend four or five feet. I also found what appeared to be a foot-

(Testimony of P. C. Dean.)

wall on the cross-cut side. I did not dig to determine whether it was a foot-wall or not. I do not remember seeing anything of a hanging-wall. Under the cut and along the tunnel toward the end [104] the next time you see that vein was about twenty-five feet from the mouth of the cross-cut. I saw it there on the north and west sides of the trend where it makes a bend. As to width of what is left of the trend it varies from six to fourteen inches, I believe. The hanging-wall is not exposed there. Proceeding toward the face of the tunnel I believe that that vein extends for twenty or thirty feet or more. It was not always on the north side of the tunnel but sometimes would cross to the south side. When you first go inside of the face of the cross-cut from the tunnel you strike a vein very near to a right angle, as near as I can remember. I have no knowledge as to how wide that vein is as to any point. I took a portion of the sample out of that first cross-cut mentioned, and a portion along at its base where the lead is left exposed. This sample indiscriminately. I do not believe I have in mind any purpose of taking a fair sample of all the exposure of that vein. It possibly would show the same character existing all through. The larger portion of the ore there is like exhibit 25, which I call copper ore. There is no Red Oxide in it but there is Oxide of copper. I think it will go over seven per cent copper. All the vein is like the matter in this sample. The portion that is now shown me, as near as I can remember was taken back somewhere near the east end of that bench in

(Testimony of P. C. Dean.)

the tunnel. I *should it* is Red Oxide of copper. It is my opinion that this lead maintains the same course or strike through the tunnel because less than four or five feet of the cross-cut is in it and we have not gone across it and the whole business' lead. In those shafts which I think were designated twelve and fourteen on the map, Defendant's Exhibit 1, we had the same identical ore. The course of the vein in those points appear to be a little bit north of westerly. The course as exposed in tunnel No. 31, I think is easterly and westerly. Anyhow, those are the reasons that I have in saying it is [105] in shafts one, two, and three. I believe that I got sample No. 23 from shaft No. 1. That shaft is about sixteen or eighteen feet deep. I found lead matter in the bottom of that and it appeared to extend on the north side. I could not say whether there was or was not any on the south side. It extended the full distance of the shaft on the north side in the bottom. I do not claim that the entire shaft was in lead matter, but I am not positive whether all of it is or not. I picked a distance of at least fifteen or sixteen inches from the bottom of the shaft and I observed that the lead extended down from above where I dug. I got Exhibit 21 in shaft No. 1. Just picked it indiscriminately from the bottom of the shaft and from the north side. I would call it Black Oxide of copper even though this morning in testimony, I called it Sulphite. I am not sure. I made a mistake if I did. I do not remember of ever having had but one assay from that Black Oxide. Copper matter, and

(Testimony of P. C. Dean.)

that one a fraction over eleven per cent. The other matter in shaft No. 1 outside this Black Oxide was lead matter. I did not see any matter in shaft No. 1, by Defendants' Exhibit 5. The only instructions I had in what I should take when I went out to shaft No. 1 was to get a sample of the ore and I limited myself to the small exposure of the north side. This large vein of Defendants' Exhibit No. 5, to the best of my knowledge and belief is vein matter and I cannot say whether there was stuff like that in shaft No. 1, or not. This stuff in the north side of the shaft that I call Black Oxide—No. 1 shaft—appears to be dipping toward the north and forming my opinion there by just casual observation, this little bench that is left on the south side is all that I have to form my opinion. I do not know how much of that matter like Exhibit 22 is in shaft No. 2. Exhibit 22, from shaft No. 2, and Exhibit 21, from shaft No. 1, are very dissimilar in appearance. I would not say from their appearance that they came from the same [106] vein. I got Exhibit No. 23 from the shaft close to No. 9. I picked it up on the dump. I would guess from my experience with such rock, that Exhibit No. 23 is good for twelve or fourteen per cent copper. It does not resemble Exhibit 21 from shaft No. 1, nor Exhibit 22 from shaft No. 2. It has some resemblance to Exhibit 25, from tunnel 31. This similarity between this sample and Exhibit 25, from tunnel 31, is a green copper besides the Red Oxide, and they are both copper ore. I judge from my experience with them; sometimes you judge by the taste

(Testimony of P. C. Dean.)

I believe, but I never tasted those. Sometimes you can judge copper ore by its specific gravity. These are the indications a prospector gets—specific gravity—hardness—taste and color. I testified on direct examination that in 1900 I was mining on the east part near the Butte & Boston Placer on the Birtha. It was in the fall of the year that I went in the Rabbit Discovery. The vein appears way across, about four feet exposed from the bottom. It appears to be extending clear across. I did not see any walls, the opening was rather a cut at that time, in place of a shaft, probably six, seven, or eight feet long at the top of the rim rock. I took out one boulder. There were others left like it. The whole bottom was ore, probably not as much as the piece I took *it*, Exhibit 23. I was down twenty odd feet in No. 9—Defendants' Exhibit No. 1—the Timbered shaft—to the cross-cut. There is lead and ore in the shaft. The shaft extended below that cross-cut. The cross-cut was running in lead matter as is all the shaft, so I did not see any walls there. The strike of the lead there, seems to be northwest-southwest. I took Exhibit 24 in the cross-cut from the east side some twenty odd feet underground and it was slightly less than twenty feet from the shaft. I do not know how much further between that, the cross-cut extended.

[107] I would call this Exhibit 24 copper ore. I do not think that all the matter in the cross-cut is like Exhibit 24. The matter there is stratified like all other leads in this camp. My opinion of the dip is that it is to the north. Under a lease that I had,

(Testimony of P. C. Dean.)

Mr. Jones and I worked the old BIRTHA, right close to the line of the Butte & Boston Placer. We sunk two shafts, I think twelve and fourteen on the map. We did not work over there long for the price of copper would not justify it, it being eleven cents a pound at that time.

Redirect Examination.

(By General NOLAN.)

I encountered a lead on the BIRTHA, the strike of it being northwesterly and southeasterly. In the light of the knowledge that I now possess to the northerly lead on the Butte & Boston Placer and this lead which we are speaking of as the northerly on this ground, I would say that in my opinion they are one and the same lead, the same character of ore. Some of the ore that we got from the BIRTHA ground went eight and five-tenths per cent and we made some shipments that went one and eighty-five hundredths. We made another shipment that went over five per cent. We were getting this ore a distance of something over twenty feet below the surface. We thought we had a footwall for that lead for awhile, before we dug back to what appeared to be the footwall and there was still some more ore back of it. The dip of the lead at that point appeared to be at the north. I do not know of any instance in which all of the matter within the walls, the finding of vein, is of the same value or the same character. By stratification, I mean the various streaks that happen to come through the lead, all different grades. In some you will find there is some iron, and in some

(Testimony of P. C. Dean.)

you will find there is some taley substance. In another streak you may find some mineral in the lead matter. In the case of location of mining claims in this district, I do not believe that [108] one per cent of the prospectors, when they find mineralized rock, take it to a geologist to see what its base is. In previous litigation, involving ground in controversy, I testified, "Q. What have you to say whether or not there is a well defined lead or load there? A. Well, a piece was cut from the largest lead matter some twelve or fourteen inches across the bottom at the time I was out there on the north side." As to whether a person going over to Hornet shaft could see ore on the east and west sides of the shaft would say that it seems to me that the whole shaft is in ore. It is all. The cross-cut is in ore. There are different degrees of commercial value I suppose. At the time that I visited this so-called Hornet shaft in the spring of 1891, I remember noticing several sacks of ore on the dump.

Recross-examination.

(By Judge BOURQUIN.)

I believe we made two shipments of ore from the Birtha to Heinze's M. O. P. smelter and one to the Colorado smelter. At that time there were other smelters in the country, the Anaconda, the Clark smelter and the Butte & Boston. We did not try any of these because we asked different parties and we were advised by them that we would get better deals from these smelters here and we tried them.

[Testimony of Robert Merriman, for Defendants.]

[109] ROBERT MERRIMAN, a witness duly sworn on behalf of the defendants, testified as follows:

Direct Examination.

(By General NOLAN.)

My name is Robert Merriman. I am 43 years old. I have prospected and mined ever since I was sixteen or eighteen years old, in Jefferson County, Butte, Silver Bow, different places. I have been in the employ of the mining company over in Butte. I actually engaged in underground mining in Butte. I leased a great deal for myself. Most of my experience was confined to copper mining. I know the ground referred to in this controversy as the Butte & Boston Placer. I have been acquainted with it since some time in May, 1900. That ground is comparatively flat; it hasn't much of a pitch. There is not shrubbery or trees on it, just a very little grass. I believe you could stand on one corner and see clear across it from any corner. There were dumps on it that could be easily seen. I did not believe that bedrock comes to the surface all over the ground and there is a matter—solid from the hill—that is on top. This slide is not of uniform depth through the entire territory. I located four claims, the ground embraced in the Butte and Boston Placer known as the Rabbit, the Hope, the Olivia, and the Gulf, I think in the spring of 1900. I am a citizen of the U. S. having been born in Montana. I hired others to do this location work but I was out there most

(Testimony of Robert Merriman.)

every day when the work was going on and examined it, and while there, I saw to it that the corners were properly marked. We discovered a vein there. I know that, because I went out and examined it. The corners of the Rabbit claim were marked by posts, all faced and squared up as required by law, around which we put monuments of stone two feet high and four feet in diameter. The posts were about four feet high and they were made of stuff that would square about six inches, and on [110] each post there was designated the corner it marked and I made a discovery there in the Rabbit claim. The green line on the map is the Rabbit and I believe that is the discovery I made right at the east end. The ground at that point was covered with wash, but there were some old holes there that showed the vein. The vein at that point does not come to the surface. One of those holes in which I saw the vein was right close to the Rabbit Discovery, I think it was about seven or eight feet and there were several others up the hill and other workings. In my judgment there was a lead visible in those old holes. I took it for a lead. As near as I can remember the Rabbit Discovery was about twelve or fourteen feet deep and perhaps four feet wide, and eight feet long, something like that, and there was a nice looking vein uncovered, and it was of such a character that a reasonable miner would be justified in locating the ground and prosecuting work there as mentioned, in the development of the property. After the discovery was sunk and the

(Testimony of Robert Merriman.)

ground was marked as I have just said, I filed notice in the County Clerk and Recorder's Office. Defendants' Exhibit 14 is a declaratory statement that was signed and recorded by me. I believe the Gulf was the next claim that I located and was marked just the same as the Rabbit. Mounds at the corners such as I have described as having been placed on the Rabbit were put on the Gulf, all of them. I made a discovery upon the Gulf claim. The reason that I located that point for a discovery was that the same old workings showed a vein there, probably twelve or fourteen feet from the point where I concluded to make this Gulf discovery. It seemed to me that the Gulf and Hope shafts are about twelve or fifteen feet apart. The Gulf discovery was about four feet by eight feet and something like fourteen feet deep, I think. We got some merchantable copper ore out of the discovery, some of which we shipped. I got something over two hundred dollars (\$200.00) for the [111] ore that I got out of that hole which possesses the dimensions that I have just given. The character of the ore was green chloride and I encountered a lead in that discovery. The indications were such that a reasonable miner would be justified in locating the ground and prosecuting work there. After this work was done upon the ground there on the Gulf claim, and the corners were marked and after this discovery was sunk, I had a notary record the notice of location in the Clerk's and Recorder's office in this county. I think that the Hope claim was the next one located. I made a discovery

(Testimony of Robert Merriman.)

on the claim and the corners were marked in the same way; the discovery being on the east of the Gulf claim; somewhere close to where you put the letter "B" on the map. The opening here for the purpose of making a discovery, was about ten feet deep and about four or six square, and I encountered a lead there. I got below the wash and into the bedrock, as I did in the other locations. I filed the declaratory statement of this location, recorded by me, it being Defendants' Exhibit 15.

Q. And state whether or not the lead that you encountered in the Hope discovery was of such a character that a reasonable mining man would be justified in locating the ground and prosecuting the work on it with the expectation of developing a mine.

By Mr. SHELTON.—Objected to as being immaterial.

A. Yes, I think it would justify a prospector or miner to take hold of it.

The WITNESS.—The next location I made there on the ground was the Olivia. I believe the last one. The corners were marked just the same as the other claims with posts and monuments and I made a discovery there. I think it is shown at about the right place according to the map. The reason that we expected to encounter the lead there, after sinking through the wash, was that there was a lead exposed in some old workings that had been thrown out. Sinking this discovery I discovered a lead that was covered in the old workings. The shaft was about 4 by 6 and something like 14 feet deep, maybe deeper,

(Testimony of Robert Merriman.)

I cannot remember exactly.

[112] Q. What do you say as to whether or not its appearance was such that a reasonable miner would be justified in locating the ground as a mining claim and spending his money in its development?

By Mr. SHELTON.—Objected to as immaterial.

A. Yes, sir, I thought it would justify.

The WITNESS.—I recorded a declaratory statement of that location. The original is here in evidence now as Defendants' Exhibit No. 13. In 1900 I acquired a bond interest in the Hope claim, some litigation over the giving of that lease and bond, and after the litigation was finally finished, a deed was made to myself and Mr. Mason. That instrument, called Defendants' Exhibit No. 16, is a deed executed by me, transferring a half-interest in those locations to Mr. Mason. I continued to work this property until I was enjoined. I helped on that tunnel that is from the open into this Gulf discovery. We did some other work upon the ground, before we started that tunnel, in the way of sinking shafts, driving tunnels onto different veins. My intentions in running tunnel, designated on the map as No. 34, was for the purpose of having a way to take the ore out of there, without hoisting it to the Gulf shaft. We drove that tunnel quite a way in slide before we got to the lead. After striking the vein, we followed it something like 150 feet north. We took out of the tunnel merchantable copper ore, and shipped and the returns more than paid the expenses involved in getting it out.

(Testimony of Robert Merriman.)

Q. Now, then, you tell us, likewise, that you are something of a placer miner. In going through this tunnel or going in from the surface of the ground and going through this wash, did you see any evidence of placer in that wash?

By Mr. SHELTON.—Objected to on the ground that it is immaterial.

A. No, sir; I did not see anything that looked like placer to me.

By General NOLAN.—The recorded matter shows that the evidence was given, not for the purpose of assailing the patent, but for the [113] purpose of showing that this ground is of no value for placer purposes at all, and that its value, if it possesses any, and it is admitted to have a value of \$25,000—is by reason that quartz is exposed there.

(Witness continuing:) Speaking of the location of the Gulf, Olivia, Rabbit and Hope claims about which I have already testified, there were notices posted at the discovery shafts when locations were made. These notices purport to give the dimensions and the date, the name of the locator and describes the land and corners, and so on. I have no interest in the ground in controversy at present. I disposed of it to Mason, P. P. Clark, Mrs. Farland, and some of it to a man by the name of Bushnell. There were lots of dumps and holes on this ground when I became acquainted with it in 1900, and there was ore on a great many of the dumps. I do not believe I did any work right after I completed by location or probably three months afterwards I be-

(Testimony of Robert Merriman.)

gan working on those claims, and worked probably two or three months sinking shafts, driving tunnels and stoping some ore. We sunk on those, two leads, that I have already testified about. I only drove one tunnel before I disposed of my interest. That is the tunnel marked on the map as No. 34. In my judgment, the lead that I followed in this tunnel was a well-defined lead. It had one good wall that we followed all the way with the tunnel. My observation of it was that the course of the lead was a little south of east and north of west; where we found it the course was regular. At the breast of this tunnel we were probably 150 feet east of the Hornet Discovery. Part of the time I lived there, I helped in running a drift from the tunnel to the Hornet Discovery. It was in a white like lead matter with some green quartz through it—ore. I think that that lead matter I encountered in the drift was a portion in the lead that I had encountered in the tunnel. It was about the same kind of material—a little higher grade than the footwall—and extended to the vein. [114] This mineralization compared favorably with the lead I encountered in the tunnel. I was present when that drift was raised from the bottom of the Hornet Discovery in a northeasterly direction. Material along that drift is ore. In my opinion, it is the same lead matter that we encountered in the tunnel up above. The so-called Mullins-Kemper weinze was sunk after I quit work on the tunnel after I was enjoined by Mr. Kemper from carrying on operations.

(Testimony of Robert Merriman.)

Q. Do you remember any occasion when Mr. Mullins came on the ground there with Mr. Kemper, and a conversation took place, in which they wanted you to dispose of your interest?

By Mr. SHELTON.—Objected to as leading, incompetent and hearsay.

(Witness continuing:) I remember the conversation. It was just before they began the injunction proceedings. The conversation took place in the tunnel where I was working. At that time I was on this lead and taking out ore.

Q. What was the conversation?

By Mr. SHELTON.—Objected to as calling for hearsay and incompetent testimony.

(Witness continuing:) Well, I believe Mr. Mason says to me, "Well, you fellows have discovered something here. Let us make a settlement and we will all get something out of it"; something of that kind, and we talked about the price—what we would get, and so on, and he said, he would let me know in a few days, so in a few days he began the injunction proceeding before I saw him again when he came down to me—I was working at the mines in the east part of town—and he says, "I think I can get you \$15,000 out of this"; he says, "If you will give me ten days' time." I says, "I have already deeded away my interest in that and it would not be enough money and I would have to have more money than that." Mr. Kemper was present at the conversation at the tunnel—the Gulf. The injunction was issued sometime in 1901, I think. [115] The injunc-

(Testimony of Robert Merriman.)

tion was issued against me by Mr. Mullins and Mr. Kemper, three or four days after that conversation, I think. I saw some of the material on top that they took out in mining that winze. It was lead matter of a merchantable character. Passing to the lead in the Point Pleasant ground—the upper lead—I went into one of those old openings in 1900 and in that opening I saw a quite well defined lead. That opening would be somewhere close to the Rabbit Discovery. I was never in any holes on the Birtha ground, east of this placer ground so I never saw any lead there. Along this placer ground I think that all the openings that I have spoken about on the northerly lead, encountered the same lead in this course east and west; that is the way it looks to me—I should judge that all the openings and tunnels about which I have testified, on the southerly lead, were on the same vein. To my knowledge in 1900 there were two veins in this placer ground running east and west. In connection with the transfer that I made of my interest in this property, I transferred an interest to Mr. C. P. Conley, to Mr. Fitzgerald and to Mr. Brown.

Cross-examination.

(By Mr. SHELTON.)

My family is living at Alhambra and at the present time I am interested in mining about six miles from there. I lived off and on in Butte about twelve or fourteen years. While here, I followed mining. Sometimes for myself and sometimes I worked for wages. I do not remember that I located any claims

(Testimony of Robert Merriman.)

in this county other than the one about which I have testified. I located the claims I have in Jefferson County now—eight of them—and deeded them to the Lave Mountain Company. They are not patented. I located three or four in Madison County and defaulted them. At the time I located them, I thought they were of sufficient value to justify exploitation and development but concluded afterwards that they [116] were not. I did considerable prospecting upon the head of what they call Carmichal. While in Butte I worked as a miner for the Heinze people for a while. When I located the Gulf claim there was a notice of location of the Hornet. Location of the Gulf was made a short time after I got my lease and bond on the Hornet. I made the Gulf discovery, because they refused to go on record with the Hornet. I knew that my posting the notice on that ground, that had been located, was void and of no effect. The Hope was the next claim that I located. I made the discovery near the point “B” on this map Defendants’ Exhibit 1. I do not think I made that discovery on the Birtha ground. I think the Olivia was the next claim and the Rabbit was the first one that I completed. The Rabbit and the Olivia were practically on the same ground. My objection in thus locating all these claims was to get all the ground that was good. I knew that it was advisable to have the veins extend through the end lines in my claim, so that I would get extra lateral rights. After I drove that Tunnel I came to the conclusion that the Hope and the Gulf discoveries were both on

(Testimony of Robert Merriman.)

one vein. When I made the Hope discovery, the Gulf discovery had been sunk about eighteen feet and I had no tunneling. I thought there were different veins for the reason that the material, taken from these two discoveries, was not of the same character. I was enjoined by Mr. Kemper and the reason that I did not go ahead with the work was that I did not feel like putting my money into it when there was a lawsuit coming up. I did not try to find out whether there was an open piece of ground in between the Butte & Boston Placer and the Birtha. I sold Mr. Mason interests in there some little time after I started work. We sunk about fifteen feet on the Gulf and then opened a drift out north probably about seventeen feet from the bottom of the Gulf Discovery, then we did nothing more until fall, when I encountered [117] a streak of ore in this drift in the Gulf, running in a northeasterly and southwesterly direction. The high-grade ore was about ten inches in width in the Gulf. During the time I was not working on this claim, I had a lease on the Glengarry mine. We followed the ore on a streak probably a distance of about 150 feet. We did not begin the tunnel in the Gulf discovery, we ran a tunnel in from the side and tapped the lead. The cross-cut from the Gulf discovery was run in before the tunnel probably about fifteen or twenty feet. It was on that streak of ore about ten inches wide. The whole length of the tunnel, I think, is about 275 feet, probably about four feet in width and after I had run the tunnel, I extended the cross-cut to the north

(Testimony of Robert Merriman.)

towards the Hornet and run clear into the Hornet Discovery, I think. Material in the Hornet shaft was ledge matter—merchantable ore. There was good ore in the Gulf shaft and we had ore in this tunnel. The reason that we run for the end of the cross-cut in driving the tunnel instead of running up the Hornet shaft, was because there was a better streak of ore there—higher grade. We run where the highest grade of ore was. It is a fact that we ran in on the vein in the tunnel. We went out one wall in the tunnel. I took out all ore all the way in running that cross-cut. I found that ten-inch streak on the footwall on the end of that drift. In running that tunnel we were able to follow the footwall without any difficulty. I did not remember that we found the break in it at about the point where the cross-cuts come together. There was a kind of ledge matter mixed with copper ore in the cross-cut from the tunnel to the north shaft. I found the ore in a continuous body and I shipped all that came out of the cross-cut. I do not know whether I found any porphyry there or not. It was a kind of granite mixture. I am not much of an authority on formations, but I think I can tell the difference [118] between ledge matter or lead and country rock. I confined myself to the tunnel for the reason that the ore looked better there; the best streak of ore that I had, was there. I thought the vein ran east and west and I ran the cross-cut north between the one wall in the vein. I was in ore all the time. We were in low-grade ore and I was hunting for a better

(Testimony of Robert Merriman.)

grade, it not being as good there as I found in the tunnel. I took out the same grade of ore in the tunnel and the cross-cut but lower grade. There was more high grade ore in the cross-cut—bunches. The great bulk of material was of low grade. In running the cross-cut I found granite mixed with the rest of it. This was pretty close to the surface of the bedrock. The body of the main cross-cut will be pretty close to the surface of the bedrock. In some localities, you find bedrock at the surface, considerably broken up; in other localities, you do not. Granite does not soften in water and crumble and crack. I have seen it as hard where it is wet. It is stained sometimes, more or less. Although there might be a vein near, the copper would not necessarily be carried and distributed, through the attraction of granite. An inexperienced man could easily be mistaken because of the resemblance this stained material bears to vein matter, into the belief that this was vein. At the time, during this work, I tried to find whether there was any placer there or not. I panned a dozen or fifteen pans in different places. I scraped up on the surface of the bedrock and in the slide and in the wash. I did not confine my examination to any particular place. I tried in two other places that I know of. I also had some of the material assayed, by fire assay, to find out if there was any gold in it but they did not find any. You would be more apt to find gold by means of fire assay than any other, if there was gold in it. The bedrock of the Butte & Boston Placer is covered

(Testimony of Robert Merriman.)

with what I would term slide which is of different depths at different places. I would say that Defendants' [119] Exhibit 21 is a kind of a mineralized granite and Defendants' Exhibit 22, a quartz, I think, which in my judgment does not carry any mineral. Neither of these two samples look like copper ore to me. I do not believe I saw anything like sample 22 in the cross-cut, there might have been a piece of it there. I did not see anything like Defendants' Exhibit 21 in the cross-cut. The tunnel was all in the mineralized granite or lead matter about like that, perhaps a little more mineralized than that.

Recross-examination.

(By Gen. NOLAN.)

Speaking of the Rabbit location noted in green on the map, and my desire to secure extralateral rights, and a location was made there, if the streak of the lead was east and west I would have extralateral rights. At the time of locating the Rabbit and Olivia claims I knew that that ground was covered by the Butte & Boston patented Placer company and I knew that if I established my right to a lead that I would only get twenty-five feet on each side. The reason that I did not go further westerly in sinking the Olivia and Rabbit discoveries was that I knew that the wash was deposited at the west end. Taking the Olivia claim as it is marked on the map here, with the lead running east and west it is my opinion that I would have extralateral rights and the same would

(Testimony of Robert Merriman.)

be true of the Gulf and the Hope. It was not my object in making those locations to get the surface of the ground, I wanted the quartz leads in the ground. I testified that at the time I made a discovery of the Gulf and Hope claims that I thought they were on different veins. There were some other workings there at that time, if I had closed them out they probably would have disclosed the true situation. Since that time, however, and with the additional work done there, [120] I would now say I believe they are all on the same vein. As a mining man or prospector I do not believe it is necessary for the purpose of determining the strike of a lead to encounter the same, through the entire length of that claim. A man generally takes a strike of his vein on his discovery and goes accordingly to that in taking up his claim. I did not see any evidence of a cross-fissure in the neighborhood of the Hornet shaft and the Gulf shaft. I am certain that the distance of that rich ore body which I consider was a rich strike as it ran east and west there, did not fix the limits of the vein. This rich ore body was removed by me as I went through. There was likewise ore towards the south, outside of the limits of this rich streak. I shipped some of that ore and some more out of that cross-cut of the Gulf, the footwall that we encountered in the shaft there north of this rich streak that I have been speaking of. The streak lay right on the footwall and I never found what I consider a hanging-wall.

(Testimony of Robert Merriman.)

Recross-examination.

(By Mr. SHELTON.)

I do not believe that there are two walls shown in the tunnel. I have never been down in the winze but I know there has been some ore stoped out in there. I do not consider that there is a distinct well-defined wall on the hanging-wall side, just a little east of the cross-cut. It is metal and stuff but I never took it to be a wall. We blasted in it once or twice in several places, and always found ore in it. It was a mixture of granite and ore the same as was in the cross-cut. If I continued to work on the vein and found clear granite I would have concluded that there was a wall of clear granite in the veins—a horse of granite or something right in the veins. In a case of that kind as a rule, it would be surrounded by vein matter. Lots of these miners [121] mistake it for a wall but they soon discover their mistake because it pinches—runs out. In my opinion there has never been a hanging-wall shown in those workings. I just can't remember whether that cross-cut on the Hornet shaft in an easterly direction is not pretty clear granite or not. I have always understood that the limits of quartz claim located within the limits of a placer claim would be the limits of the ledge—you would probably be limited to that. You can locate in one claim a strip of ground 600 feet in width and 1500 feet in length. I covered the east end of the Butte & Boston Placer by another location which overlapped the Gulf for the greater part of this length.

(Testimony of Robert Merriman.)

Redirect Examination.

(By Gen. NOLAN.)

It was necessary to do that in order to get all the lead, as I thought it existed within that ground. I did not see any evidence of the course of granite over there. In mining parlance a horse is generally a barren place in a vein that appears through a vein that divides the ore body. I do not know as I found any barren place while carrying on operations on the southerly vein.

Recross-examination.

(By Mr. SHELTON.)

My definition of a horse in a vein is a barren filling, in a vein which divides the ore body. Sometimes it is granite and sometimes it is another formation. In the ordinary sense of speaking, granite is not vein matter but it sometimes goes in to a vein. Generally in this district it is a substance that incloses the veins in walls.

Redirect Examination.

(By Gen. NOLAN.)

Granite in lead, mineralized like other minerals is a portion of [122] the lead. It is not thrown aside by the miner as not containing value for the simple fact that it is granite instead of quartz or porphyry.

[Testimony of P. A. Stevens, for Defendants.]

[123] P. A. STEVENS, duly called and sworn on behalf of the defendant, testified as follows:

Direct Examination.

(By Gen. NOLAN.)

My name is P. A. Stevens and I am forty-eight years of age. At the present time, I am located in Granite County where I am working a mine for myself. Before coming to Granite County, Butte had been my home for some twenty-six or twenty-seven years, during which time I had been engaged in mining off and on for better than twenty years. My first mining was in the summer of 1884. I have done nothing but mine for ten or twelve years continuously, during which time I have done actual mining myself and supervising others. During the last ten or twelve years I have engaged entirely in quartz mining. I have run mines and worked mines here in Butte and was superintendent in charge of operations on a certain group of claims about ten miles out of Virginia City, Nevada. I have been over the Butte & Boston Placer ground and been over it for I should say fifteen or sixteen years, but I have not been familiar with the ground except for the last eight or ten years. I became acquainted with that ground the last eight or ten years by conducting mining in that district, quartz mining being carried on in the immediate neighborhood. Some of the mines are being operated there now but those operated are the Pittsmont, which owns a smelter it is conducting

(Testimony of P. A. Stevens.)

directly east of this ground. Directly west the Bullwhacker has shipped a large amount of ore. East, the Pacific has shipped ore from its property which lies south, and the Birtha, directly on the northeast, and the Sarsfield, which lies about two claims across the way, north of the ground in controversy. Some of these claims have been operated, to my knowledge, fifteen years or more—not continuously but at odd times. Beyond the immediate neighborhood of this ground I know of many such claims that have been in existence for a long time on the south. There is a large amount of ground which belongs to the Amazon Butte Co., at the present time and quite a number of [124] claims to the east which lie north of Columbia Gardens. Other claims there in the Mouth of Clark Canyon have been operated possibly twenty years ago and shipped ore. My acquaintanceship with those claims has been such as to enable me to say that the course or strike of the vein in that locality is in an easterly and westerly direction.

Q. Now, then, what, if anything, do you know about the operation of placer mines in Butte?

By Judge BOURQUIN.—Objected to as immaterial.

A. I know of none whatever.

Q. And what, if anything, do you know of any placer mining operations occurring in this ground in the Butte & Boston Placer?

By Judge BOURQUIN.—Like objection.

A. I never knew of any at all.

(Testimony of P. A. Stevens.)

Q. How close to this ground in controversy—the Butte & Boston Placer—have you known of any placer mining being carried on?

By Judge BOURQUIN.—Objected to as immaterial.

A. Not within one mile.

Q. And in what direction from this ground?

By Judge BOURQUIN.—Like objection.

A. West and northwest.

(Witness continuing:) The closest point I knew in placer mining was right back of Walkerville. I operated the Bullwhacker somewhere about six years ago—for something like five months all together. I did not suspend operations by reason of the ore giving out. During that time I shipped approximately about ten thousand tons of ore which was of a character that would pay the expenses and yield a profit.

Q. Now, take it with reference to those leads, is there any limit of continuity in them?

By Judge BOURQUIN.—Objected to as vague and indefinite as to what leads are intended.

[125] (Witness continuing:) A. Yes, sir. And those leads over in the neighborhood of this ground with which I have an acquaintance, that run in an easterly and westerly direction, I would say that there is certainly a limit to continuity in their strike. I understand a lead to be a body of quartz, mineralized. In such a lead, its contents are not always exclusively confined to quartz nor is it necessary that the lead possess any specified width. I have known leads to be from one inch to three hundred feet in

(Testimony of P. A. Stevens.)

width. All of the filling in a lead is not of the same character, color, or formation, nor is the value of all the lead matter the same. This material differs in value in the leads in different formations. In some ledges the line of demarcation will show almost the same as the wall, the streak of stratification separating the different value of rock, the high from the low grades. There is a difference in the color of those different bodies all forming the lead. The miner is generally able without uncovering the lead for its entire length, to determine the strike of it by the openings where there are tunnels or shafts. By taking the course of the veins through the bottom of each hole, and lining the holes up on the surface, is generally the way I tell if a lead exists between those openings where they are 50 or 100 feet apart. I do not know of any mines in this district where the lead has been uncovered throughout the entire distance of 1500 feet to determine its strike. There is a measure of regularity in the strike of the lead. There has got to be. I made an examination of the ground in controversy here on the eighteenth and nineteenth of this month. The character of the formation on the surface of that ground is almost entirely wash, but not of equal depth. I went down, and in some of this opening I examined, and while I did not take any measurements of the depth of the wash, I should judge from 50 to 10 feet in depth. I did not notice any gulches or ravines to any extent, visible [126] on the surface. During the time that I was carrying on operations on the Bull-

(Testimony of P. A. Stevens.)

whacker, I don't think I was more than 400 feet from the ground in controversy. Making this examination, recently, to which I just referred, I first went down what is called, I believe, the No. 1 shaft on the Rabbit which is about 18 feet deep and I consider that they had bedrock in that shaft. There was exposed in that shaft what I would call a lead. A part of this lead was made up by what we call float or surface ledge matter and part of black and irony quartz a streak of which appears on the north side of the shaft. The irony ore appears about three feet below the surface of the bedrock. There is a wall showing in that shaft but I would not call it a permanent wall. I procured the sample there, for the purpose of showing the mineralization of that lead. I would call quartz ore—lead matter. It lies in the bottom of the shaft to the north side running almost the entire length of the shaft in an easterly and westerly direction. This streak of ore lying in the bottom would enable me, as a miner, to determine the course of that lead and its strike which in my opinion, is in an easterly and westerly direction. I do not believe that development work is going far enough in the shaft to determine the dip of the lead. I notice quite a little dump at that shaft, and in the material there was evidence of mineralization. It was what I would call ledge matter.

By General NOLAN.—We desire to offer in evidence, this sample.

By the EXAMINER.—I will mark it Defendants' Exhibit 30.

(Testimony of P. A. Stevens.)

(Witness continuing:) When I made an examination of this ground on the eighteenth of this month, Mr. Mason, Mr. C. C. Clark, Mr. Jones, and Mr. E. P. Clark were with me. After leaving No. 1 shaft, we went to the next shaft, east of that, which I believe was called No. 2. It is so marked on the map and at the mine by Mr. Barker, the surveyor. That is a shaft about fifteen feet deep [127] the development of which is below the surface of the bedrock. I found in that shaft the evidence of a lead and strike of which is in an easterly and westerly direction, the same as in the No. 1 shaft. I obtained a sample from this lead for the purpose of showing its mineralization. I considered that it was in place. I did not notice whether there was any wall to this lead in this shaft. I would characterize this material as porphyritic quartz or quartz. I could not say from my experience that it has any value nor could I say what was the width of the lead there, as particularly the whole bottom of the shaft and around the shaft for several feet was about this character of rock. The appearance of this rock would suggest to an ordinary miner the extent of a lead.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 31.

(Witness continuing:) After examining this shaft, I then went to what I believe is called the Rabbit Discovery shaft, marked on the map here as the Rabbit Discovery, which is in an easterly and west-

(Testimony of P. A. Stevens.)

erly direction from No. 2 shaft that I examined. There I found a hole about ten or twelve feet deep. The small timbered square hole had one compartment. I made an examination of that opening, and ascertained that there is a lead in the bottom of that shaft. The only place I found ore in that shaft was at the bottom in the northwest corner in that shaft, across one corner. I think on the south side of the shaft that lays on the bottom there, is what I would call wall—the footwall. I would consider that there was wall enough there to justify a man in prospecting and doing development work and that it was a good enough well to locate a quartz claim on. With reference to a lead, there are two walls, a footwall and a hanging-wall. The footwall is below the lead. The position of a hanging-wall will depend upon the dip of that lead. The flatter the lead is, why the hanging-wall will stand over the ore. Of course it lies in and hanging [128] over that lead. You cannot tell the footwall from a hanging-wall where the lead goes vertically into the ground. I procured the sample from the Rabbit Discovery shaft to show the mineralization on the lead. I would call it ore. I picked it out of the northwest corner of the shaft down in the bottom in a solid formation. Without assaying it, I would say, as a miner that it contains copper value.

By General NOLAN.—We will offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 32.

(Testimony of P. A. Stevens.)

(Witness continuing:) I next went to shaft marked No. 9. There I found a two compartment, timbered shaft, 25 feet deep with lots of loose dirt in the bottom so that I could not tell how much deeper it was. I found at the depth of 25 feet a cross-cut running north about ten feet. I encountered the lead in the cross-cut. That lead contained commercial ore. By that I mean ore of such a value—knowing ore as well as I do out there—that would pay to take out and ship. The body of ore was three or four feet wide. There appeared to be a footwall lying to the south side. I took a sample of the ore out of that vein for the purpose of showing mineralization. I picked it out of a solid formation. I would call that copper ore, with the base of decomposed quartz.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 33.

(Witness continuing:) There was evidence of mineralization on the dump at that shaft. After making this examination I went to the Rabbit tunnel marked No. 31 and made quite an extensive examination of the tunnel, ore showing there. I found a lead of ore exposed in the cross-cut running north. The cross-cut is 25 feet north and about 60 feet from the mouth of the tunnel. I found the ore right close to the base of the cross-cut. Part of that ore was merchantable and part of it was not. I had noticed the footwall there. The strike of the lead could be

(Testimony of P. A. Stevens.)

seen very plainly. It is easterly and westerly [129] and the dip northerly. That was not the only evidence in the tunnel. In going back to the main tunnel, the tunnel at that point was northeast for a distance of about thirty or thirty-five feet and encounters some ore and some ledge that shows in the cross-cut, concerning which I have just testified at a point about thirty or thirty-five feet east of the mouth of the cross-cut. I did not put a compass on it but it is my opinion that this is the same lead in both places by the cross-cut. In this second place there is really no wall. I followed that lead for a distance of thirty or forty feet on its course east and west. I have here a sample of lead matter that I obtained in the tunnel. The ore was scattered through the lead. I did not see the other side—the wall.

By General NOLAN.—We will offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 34.

(Witness continuing:) I would call that quartz that has quartz as a base. It is my judgment that this lead I examined there, that I have testified about, is one and the same lead. After leaving tunnel No. 31, I went to the Hornet tunnel which is directly south from the lead we have been talking about. After going there the first place we went was into the main tunnel marked No. 37 on this map. That is somewhere in the neighborhood of fifty or seventy-five feet in length, I should judge. In there about forty or fifty feet from the mouth we encountered a

(Testimony of P. A. Stevens.)

lead, the bedrock showing. We encountered it at the surface of the bedrock and after we encountered it, it was continuous throughout the entire distance of the tunnel, I should say somewhere near 100 feet more or less. This lead lies dipping to the south. It may continue on to what I believe is called the Mullin's Inclined shaft. It would pass on beyond that and I would say there is what I would consider a well-defined footwall. This two or three feet that I speak of does not mark the extreme boundaries of that lead there. There is some [130] difference between this material encountered in that lead and the footwall. I would not call the covering in the winze there, a wall in the lead. It is ore because it has been broken into and shows there is ore standing there now. As to other explorations I made in that tunnel there or in the passage way leading from the tunnel, I went about twenty or twenty-five feet to what is called the Hornet shaft and made an examination of that. The Hornet shaft is connected by a cross-cut about twenty-five feet in length with this tunnel. I went down in the Hornet shaft and examined a portion of the ground there. I noticed a lead and a wall which I would call a hanging-wall to that lead. It shows in a short drift running west from the bottom of the Hornet Discovery shaft and also in the bottom of the Hornet shaft on the south side. The approximate width of the lead there, taking the footwall, the Mullin's Inclined shaft at that point would be somewhere in the neighborhood of twenty feet or more. Everything that I have seen between

(Testimony of P. A. Stevens.)

those two points just indicated is ledge matter. I then went from the bottom of the inclined shaft or from the bottom of the Hornet shaft in a northerly and easterly direction to a circle cross-cut that closes into the footwall and connects with the Mullin's Inclined shaft. I would call the material that I encountered, ledge. Then I continued on east to the Mullin's Inclined shaft, looking at the wall. It would be very hard to discern whether it was a hanging-wall or whether it was ore. That was east from the bottom of the lower cross-cut. My examination of that was that my conclusion as to the extent of a footwall was right and that the wall shown there was ore instead of a hanging-wall. I believe that completed my examination of the tunnel and its ramifications. While I was making examination in there, I obtained samples for the purpose of showing the mineralization of the lead. This first is a sample from the Hornet, upper cross-cut, which is the course of lead from the tunnel into the Hornet shaft. [131] I would call this material, ore with a base of quartz. It is mineralized to an extent and from my experience of telling copper ore I would say that it is merchantable.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 35.

(Witness continuing:) I obtained the next sample from the Hornet shaft between the upper cross-cut and the lower cross-cut, taking in three sides east

(Testimony of P. A. Stevens.)

and west until about half way between the two cuts and the north side slightly higher. I dislodged it from the solid by the way of an instrument known as the mining or sample pick. I would call that sample ore containing copper. I would not say what percentage it would go but I would say it was shipped over. By that I mean ore that can pay you to ship samples and get something for your labor. The base of it is a quartz formation—the ledge formation—mixtures.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 36.

(Witness continuing:) The next sample I took was from the bottom of the Hornet Discovery along the south side extending in the drift for some two or three feet. I would say that it is ledge matter and contains practically no mineral. Its existence in the position in which it was there, would suggest to me the existence of a lead.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 37.

(Witness continuing:) The next sample I obtained was from the lower cross-cut which runs from the bottom of the Hornet shaft, and in a northerly and easterly direction to the bottom of the inclined shaft. I obtained it for the purpose of showing the mineralization of the lead there. I would call it merchant-

(Testimony of P. A. Stevens.)

able ore. This reddish substance in some of the places is what is known in that country out there as Red Oxide. In the light of my experience [132] as a miner I would say that that ore contains in the neighborhood of fifty or sixty per cent copper.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 38.

(Witness continuing:) I have a sample that I overlooked a while ago that came from the Rabbit tunnel which would be on the northerly lead. I would call that merchantable ore bearing copper.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 39.

(Witness continuing:) I then went to the Rabbit tunnel marked 31 and went in the north cross-cut to examine a hole that was put up through the surface. I was shown that by Mr. Mason. I then went on top of the mines at the shafts that I had testified as being down along with it, to try and determine whether it was the same lead,—the northerly lead. My conclusion was that the holes had been sunk and the ledges exposed in tunnel No. 31 at the two different points crossed up in the main part of the tunnel, were one and the same. There was nothing to suggest to me in the examination of this so called Hornet lead in the tunnel that the ground to the south of this rich vein matter disclosed in the tunnel was

(Testimony of P. A. Stevens.)

country rock—granite—that was greatly impregnated with that rich lead that I saw running through there. I have been over the ground shown on the map here as No. 31 tunnel, No. 36 tunnel, Pleasant View Discovery, No. 32 tunnel, and No. 33. I was in those tunnels that appear to the west and south of the Hornet Discovery about a month ago. In those openings I saw evidence of a lead. I did not go down in those tunnels to see whether the lead was there or not. I wish to correct my testimony with reference to the Rabbit tunnel—this discovery shaft—I believe I called it a footwall when I meant a hanging-wall. I did not make an examination of shaft referred to as No. 21 on the map here but I noticed on the dump what I would call ledge matter. Having in mind the strike [133] of the lead I noticed further east that the strike was regular in its course westerly, why I sized those shafts up from the timbered shaft as well in mind as I could. In my opinion these shafts would be in line with the north lead.

Cross-examination.

(By Judge BOURQUIN.)

I have had charge of a number of mines in Butte as superintendent, foreman, or shift boss some few years ago which I do not remember the names of small places. I will say in late years the J. I. C., the Bullwhacker lead, and the Sarsfield. I had a lease on the J. I. C. myself. I was interested in the lease on the Bullwhacker, and had charge of Sarsfield about five months for Simon Banks who had a

(Testimony of P. A. Stevens.)

lease on it. He worked between forty and fifty miners. That was about two years ago. I never had charge of any of the big concerns—mines. I do not know of any mines operating at the present time east of the line with the best line of the Butte & Boston Placer. The Bullwhacker was working about six or seven years ago. I never worked before that time to my knowledge. It continued to operate about a year after that. I was operating it the winter before the slump in the price of copper. At that time copper was around 22 or 24 cents. I never knew it to be that high before but it continued that for six or seven months after I quit the Bullwhacker. The ore that I took from the Bullwhacker would average about six per cent copper. I was working about fifty feet deep on a big body of ore. It was not a vein, it was what I would call a dike running north and south. It was about 91 feet wide. It was going through the country at right angles to the best vein system in the section. I worked to within about fifteen feet, of the surface of the bedrock that is at the surface. I worked somewhere about 100 feet in it before I quit. This claim is southeast of the Butte & Boston Placer. I did some work easterly and westerly in one vein of this lead which crossed the dike. That easterly [134] and westerly lead would average about two feet. The deepest I ever worked on it was fifty feet. It carried copper quartz. As to the character of the ore, it contains all sulphite as there was no iron at that point. It was copper quartz ore with good copper

(Testimony of P. A. Stevens.)

in it. I encountered in there easterly and westerly leads. That easterly and westerly lead would not cut the Butte & Boston Placer. I think it was ten or twelve years ago when the Birtha shipped ore. I have never continued work since. There has been no ore shipped from the Pacific for possibly fifteen or sixteen years, nor have there been any mines working around the mouth of Park Canyon for fifteen years or more. There has been no one working up at the canyon since Mr. Heinze quit operations. The Anderson mine was worked at the time the Bullwhacker was worked during the high price of copper, and the Sarsfield, two claims north of the ground in controversy was in operation three or four months before I took charge of it. I was here, I think, five months. After I quit, they continued operations until the expiration of the lease. That would be two years ago this winter. The Calousa Leonard north of the ground in controversy, the Butte London, a little bit further north of that and the ground left up in the Canyon quit several years ago. The Pittsmont is contiguous to the ground in controversy on the west. Pittsmont shaft is about a few 100 yards west of that. When I spoke of there being no placer mines within two miles of the ground in controversy I had forgotten the placer mines between here and Butte. I should say they are about a mile from this ground. The Pittsmont ground and the Queen placer on the north and the Harrington placer just west and the land lying between the Queen and the creek was patented as placer grounds. I examined

(Testimony of P. A. Stevens.)

shaft No. one the 18th and 19th of this month—December, 1911—and I found some ore in the bottom and found that the whole shaft was in the vein. I could see no walls at all. I formed my opinion that it was the vein, [135] from the character of the ore, that I took from the northwest side and the rest of the shaft was ledge matter. By ledge matter, I mean mixed matter of porphyry and quartz and granite, and everything else that goes to make up ledge. This matter on top is not solid in my opinion, and I don't call it the vein until I go down and get one well-defined wall, and determine the ledge,—then I say that I have a vein. You will find lead matter on the dump of the vein which will lead you down to the solid formation, then you will have lead. The wall is the continued line between merchantable ore and the country rock. I would not begin to guess the merchantable value of the sample that I took from the shaft No. one. I would say that it carries a trace or better of copper. I will say that it was better than anything else I saw in shaft No. 1. The material from which I took Exhibit 30 extends clear across the North side of the shaft in the bottom. This material, like Exhibit 30, was in the east and west end in the shaft. This, as it looked to me, the shaft is down just far enough to come to the top of that. This particular matter that forms Exhibit 30 is in a streak several inches in width. I don't know exactly how wide. I didn't take a sample of the other ledge matter in that shaft No. 1. This streak did not end abruptly. I saw it was going into the

(Testimony of P. A. Stevens.)

west wall,—dipping to the west. Then I went to shaft No. 2, and found what I considered a lead below bedrock going back to shaft No. 1, all formation in that shaft in the strike being easterly and westerly. I did not have a compass with me. I considered the whole of shaft No. 2 in ledge matter, in other words there were no walls. I found all lead matter in shaft No. 2, but found no walls. The matter was quartz,—porphyry—quartz that has a resemblance to porphyry, from which I took Exhibit No. 31. It was taken from the north side of shaft No. 2. The direct vein was practically of the same material, to a certain extent. For my sampling I would take what looked to be the best [136] sample. I have assayed stuff similar to Exhibit 31 during my mining operations and it carries close to one-half or one per cent copper. I would not say that Exhibits 30 or 31 from shafts 1 and 2 carried any quartz. I could not determine from shaft No. 2, the course of the vein in any direction at that point. I then went into the Rabbit Discovery shaft and found a lead in the bottom. There is one sample from the lead shown there, in the northwest corner. I saw there what I considered to be a wall. It is my recollection that the lead is not visible in the sides of the shaft. The course there, I would consider to be in an easterly and westerly direction. I saw a hanging-wall in the northwest corner. That hanging-wall goes right across the corner of the shaft on the southerly side of the hanging-wall. I did not see any footwall. In taking the samples I brought here, I endeavored to

(Testimony of P. A. Stevens.)

take the average sample. The same as if I were going to mine. I should say there is a streak a foot wide and the same material was in Exhibit 32. Then I went to shaft marked No. 9, Defendants' Exhibit. I should say I went five or six feet north of the cross-cut before I came to what I call a lead. It was a lead of green copper ore about four feet I should judge. I saw what I might call a wall in the next shaft. It lay on the south side of the ore. It was what I call a footwall. There was a tunnel there cutting off the footwall, running from north and south with the cross-cut. The course of the lead that was in that cross-cut as near as I could judge of what was exposed of it would be in an easterly and westerly direction. There is a fault cutting across the footwall, in a cross-cut from No. 9, in about one-third of the way, I should judge. The fault crosses the footwall clean to the west side. The vein disclosed in the west side was in a cross-cut to the south. I could not see the vein on the west side of the cross-cut, on the south side of the footwall. From my experience [137] with faults and the direction of them why I will say that the lead there is faulted to the south. The ore and quartz and ledge matter in the drag of the fault is what give me that opinion. In taking sample Exhibit 33, I took somewhere near four feet in the exposed vein. I took it altogether from the east side, clear across the east side here and there. The vein was in the end of the cross-cut. The cross-cut out into it but not through it. I saw a footwall there but not a

(Testimony of P. A. Stevens.)

hanging-wall. At that point I could not determine the width of the vein. A hanging-wall might be a foot beyond the vein in the cross-cut or it might be ten feet. There is about $3\frac{1}{2}$ feet of it exposed in the cross-cut leading beyond the footwall. I took a sample from fifteen inches of the lead lying next to the footwall. The strike there again was easterly and westerly as near as I could determine. The vein there did not seem to cross the cross-cut at right angles, more to the right-hand side of the cross-cut showed the most of the vein. The cross-cut was about $3\frac{1}{2}$ feet wide and averaged somewhere in the neighborhood of fifteen or twenty degrees. I saw in the neighborhood of three feet of ore on the left-hand side of the cross-cut and $3\frac{1}{2}$ feet on the east side. Then I came out of the cross-cut and proceeded on towards the face of the tunnel. I think I went about twenty-five or thirty feet before I again saw the vein which appeared first on the north side of that tunnel. The lead leaves the tunnel at a distance of about forty feet. There is a fault or drag in the ledge discovered to be quite an extent. To quite an extent at that point the lead is turned into the footwall north of the tunnel as you go east. In the vein as I saw it in shaft No. 9 the fault is turned to the north as you go east. It appears to me that the vein is turned by the fault north for about 135 feet from the face of the tunnel. At this point there is no footwall. We crossed the footwall going east in the tunnel in the cross-cut about thirty feet [138] from the cross-cut east. That is the way it appears to

(Testimony of P. A. Stevens.)

me. As a matter of fact, the lead does not lie north of the tunnel all the way, in a place where it is faulted it is not thrown to the north as you go east, instead all to the south. After you get to tunnel 31, twenty-five or thirty feet from the cross-cut you don't see the walls of the lead any more. I would say the tunnel passes through the footwall. Apparently there is what looks to be a hanging-wall but I do not know whether it is or not. There are several feet of talc seen coming up there, the tunnel cuts into it. There is a little cross-cut opening but running east on the right-hand side of the tunnel as you go in about twenty feet back from the face, in ledge matter. In my opinion that is the ledge at that point itself, a mixture—all granite and porphyry with benches of ore scattered through it. It is copper ore which is practically the same as you will find in the main ledge back along the main tunnel. I have no particular definition for it. As to whether these are little or big bunches of ore is very hard to determine on account of its being merely a cross-cut. It is not run on them; it is just run through them as you see and the ore is scattered on both sides and the back of the cross-cut. The main portion in this mixture being granite and porphyry with these bunches of ore mixed through it. The width of the vein exposed near the face of tunnel No. 31 is somewhere in the neighborhood of fifteen or twenty feet all in vein matter. The matter exposed in the cross-cut towards the mouth of the tunnel I consider as wall rock that is in the cross-cut to the ledge. The vein

(Testimony of P. A. Stevens.)

there is what I would call ledge or ore. It is not the same material as you find towards the face of the tunnel. Without putting the compass on them I believe that the veins in general are quite regular. They [139] maintain the same general strike easterly and westerly. I testified yesterday that I could not tell the course of the strike in shafts one and two. For a vein of as great a width as that shown on Defendants' Exhibit 1, and observing the course which veins that I saw must take in order to run from shaft No. 9, from the Rabbit discovery, from the face of tunnel 31, from the cross-cut on the north side of tunnel 31 and then to shafts 1 and 2, I would say that that would be a regular course for a vein to take. My answer as to whether I knew the strike in shafts 1 and 2, if it could possibly be determined at all, the strike was easterly and westerly. I cannot tell you the width of the vein for at no point do both walls show. In shaft No. 9, I saw what I consider a footwall, in the Rabbit Discovery I saw what I would consider a hanging-wall and in the face of tunnel 31 I did not see either. A straight line will not pass through shaft 9, Rabbit Discovery and the face of tunnel 31. I saw what I consider the main vein crossing the little cross-cut north of tunnel 31 at about right angles, which is the same vein that I said was also in shafts 1 and 2. I then went to tunnel 34 Defendants' Exhibit 1 and encountered the main vein a short ways in, after getting in the tunnel far enough to get to bedrock. That was quite a distance back of the cross-cut in the Hornet Discovery.

(Testimony of P. A. Stevens.)

It first showed on the south side of the tunnel on the bottom, at that point I could not tell whether either wall showed or not. To my recollection the vein did not cross the tunnel as I proceeded towards the face. The tunnel in the east of the cross-cut that leads to the Hornet shaft I considered all in ore, all in ledge. I consider that the tunnel hits the footwall of that ledge somewhere in the neighborhood of the cross-cut and the main tunnel is run on the footwall. When I came to the cross-cut leading into the Hornet Discovery I observed that the material next to the tunnel in the cross-cut is solid ledge. This I determined [140] from my knowledge in mining operations in that district. The material is solid and you could not pick it down in spots from the bottom but you could from the sides which have a distance of three or four feet. It was a little lower grade. I cleaned off the bottom of the cross-cut at several points. Among others at that point where the cross-cut leaves the tunnel. According to my statement the change from the broken up material to the solid ledge occurs right at the bottom, and proceeding towards the Hornet Discovery, it is practically the same material all the way. I might add that a portion of it is shipping ore. I determined that from my knowledge of ore in that district. I mean that broken footwall in the tunnel there is a well-defined vein of ore. In the back of the tunnel I should judge there are between two and two and one-half feet of ore shown. The back of the tunnel is standing solid where this ore shows over the timber. I believe to

(Testimony of P. A. Stevens.)

the underhand stope or opening there, which has been spoken of as the Mullins winze; further in than that I do not remember. The openings there apparently would show that there are three or four feet of ore. Where the ore has been taken out through the tunnel it shows there, a good footwall. There appears to be a hanging-wall there but it had been broken into in places showing ore beyond it. I wish to state that just from a glance at this wall it looks to be a hanging-wall but when you get anywhere near close to it where you can see it, it is of solid ore, that is, at every point where I saw it was broken into, it is what I would call quartz. Coming back to the Hornet Discovery cross-cut which is several feet from the bottom, it was more or less low on account of being close to the wash which lies upon it. As you proceed in the Hornet shaft the bedrock slopes towards the west. That material that is broken up is the top of the lead. Right there it is ledge. In my opinion that is the lead and that quartz is impregnated with copper. All [141] that is not quartz, it is ledge matter. I would say that the size of the cross-cut being near the surface would show possibly one quantity of pay ore on this ledge matter. Some of the floor was covered with loose dirt or of what I saw of it I would judge that at least one-fourth of it would be shipping ore. Next to the tunnel I saw about two feet of the floor of the cross-cut and where it is enlarged at the old Gulf Discovery shaft is two feet wide and the full length clean in to the opposite side would be a distance of eight or ten feet, and

(Testimony of P. A. Stevens.)

from that point on to the Hornet the largest part of the floor was practically visible. I picked it, I did not clean it out with a shovel and I based my statement that about one-fourth of that would be pay ore from what I picked up from the bottom. There is no dividing line between what I call the one-twentieth pay ore and the one-fourth pay ore. As you get clear to the top of the lead that your values practically disappear to a certain extent and that is the case here. I took sample thirty-five from the bottom of the cross-cut neither taking the best nor the poorest, nor making an effort to taking an average to have it assayed, merely to show from my evidence that there is pay ore in there and that it is lead. I did not aim to make a fair exhibit of what was shown in that cross-cut near the good ore, nor the poor ore, nor the walls, nor the floor. I would call Exhibit 35 shipping ore. The proportions of the material in the shaft at the point from which this Exhibit 36 was taken, bears possibly one-tenth of the whole. All the sides are somewhat of similar character. I do not call Exhibit 36 lead matter. The balance of the material in those points in the Hornet shaft were ore and lead matter mixed up together. I would not assign any particular proportion to the ore. I took Exhibit 37 from the bottom of the Hornet shaft along the south side and two or three feet on the west drift. It is nothing but ledge matter and wall rock. That material was in place looking to me like a wall. I took possibly [142] a few inches in the side of the shaft to get this Exhibit 37. I took it possibly a

(Testimony of P. A. Stevens.)

foot from the bottom of the south side of the shaft to find out. The walls are not visible to any extent upon that. They appear on the west side of the drift being almost at the bottom in the south side. It shows a broken wall in the breast of that drift which runs west some ten or fifteen feet as near as I can remember. Then I went into the lower cross-cut from the bottom of the Hornet shaft and went into the underhand stope or something of that kind where the ore was taken out. I found the material there to be the same as in the upper cross-cut there being in the neighborhood of ten feet of ground between them. I liken the ore in the two places to the respective values,—the commercial ore. The average of ore in the lower cross-cut would compare very closely to the sides of the cross-cut in there about one-twentieth, not over. It might be more than that on account of the biggest part of the ore that shows in the lower cross-cut being of a higher grade than that above. The high-grade ore is in smaller and more separate quantities than the above. There has not been a rapid decrease in the quantities in the floor of the cross-cut below. As a general rule, you would not expect the ore in quantity and value all through the ledge to get better as you go down. The pay ore on the lower cross-cut is in bunches and stratas and practically the same as it is in the cross-cut above. These stratas run in different directions in the lower cross-cut. They are a few inches in width. I did not count the number of stratas and bunches that contain ore like Exhibit 38. As I ap-

(Testimony of P. A. Stevens.)

proach the stope from the lower Hornet cross-cut, I notice the tunnel in the lead in those stopes for I cut in through the cross-cut after I struck the footwall. No portion of it was in the cross-cut, it was beyond there—east of the cross-cut. In taking Exhibit 38, I picked out, I should judge, the average sample possibly of shipping [143] ore that shows in that cross-cut boundaries. It was merely to show that there was ore there of commercial value. There is some in where this green copper ore and Red Oxide came from. I know aplite. I have encountered it in my mining operations in three or four places. I went out to this ground to prepare for testifying in this case and with the idea of making a careful presentation to this court. I was out there twice the 18th and 19th of this month—December 1911. After my examination of the Hornet tunnel and that ground there I saw enough of the lead showing up there to show the practical course of the lead and I thought there was a well-defined lead there.

Q. And if there were some workings which showed nothing of the ore you would not think it necessary to see that and you would not take that into account?

By General NOLAN.—We object to that as argumentative. He could not see anything below that, that would wipe out of existence anything that had existed above.

A. There was nothing deeper that I got to, that would give me any information on that lead.

(Witness continuing:) I saw the tunnel and dump marked 37 on Exhibit 1, but I did not go into

(Testimony of P. A. Stevens.)

it. I would run into tunnel No. 34 above if it would run east far enough, but I do not know how far it went. Mr. Mason was with me the first afternoon I was there and asked me to look at the Hornet tunnel. He did not ask me to examine tunnel 37, and its connected workings.

Redirect Examination.

(By General NOLAN.)

I said that it was my understanding in connection with the examination that was made out there that the controversy as to the southerly lead depended upon whether there was any lead in the cross-cut or in the Hornet shaft and I made my examination for the purpose of determining whether that was the case or not. As to that fissure and the lead [144] in the south drift from the Hornet discovery as you go through the lower cross-cut and come to the underhand respectively, which the openings that have been worked cut from there to the tunnel above, it shows a streak of ore or a fissure running into the hanging-wall with shipping ore in it. It might be a fault, it might be a streak or it might be a tunnel running into the hanging-wall quite a distance northerly and southerly. In my opinion, the existence of the ore body that I discovered there is not due to the existence of that fissure although the fissure that shows in there might have a tendency to make the lead west of it a lower grade than which shows in the hanging-wall east of it. Apparently there is a separation where the fissure occurs of the values of the lead in my mind, and assuming the existence of a

(Testimony of P. A. Stevens.)

fissure there, it does not tend to change my judgment as to the course of this lead easterly and westerly which I saw in the Hornet discovery and in the cross-cut where it does not change, but continues within the footwall which shows at that point running easterly and westerly. That dike that I spoke of in the Bullwhacker has no connection with this southerly lead. That dike runs in a northerly and southerly direction quite a distance east of any of this ground and runs to a point south of the Birtha and then takes a northerly and southerly course from that through the Sarsfield, and I do not know how much farther it has been discovered there on the top of the mountain. Aside from the dike in this Bullwhacker there was a fissure lead whose course was easterly and westerly—a well-defined east and west lead. There is no lead running north and south in the Bullwhacker. It is a dike. There is no lead independent of that dike. When I spoke of a lead on the Bullwhacker having a course northerly and southerly I had reference to this dike. I first found this vein on the Bullwhacker that had an easterly and westerly course in this dike. As to its continuity, affected by the dike, will say that I did not follow it going [145] through the hanging-wall of the dike as my raise in the hanging-wall was low-grade ore—but I followed it for 91 feet from the shaft I worked east, that was running across the dike. I followed it for 91 feet, until I hit the wall of the dike and followed it for quite a distance on east toward the foot-wall of the dike without any break or interruption

(Testimony of P. A. Stevens.)

whatever. I have stated in my evidence that this northerly lead shows three feet of ore but with only one wall, there is no place in my mind that I examined a northerly lead where I could determine the width of the ore because there is no place that shows the two sides at the same time. It is my experience that leads generally have a uniform width and they bulge out and narrow up in their course.

Recross-examination.

(By Judge BOURQUIN.)

I do not consider it a guess from my observation to say that it is the same vein when the vein is not followed over from one wall to another separated by distances about fifty feet, and I do not know the width of the vein and some of those holes I cannot see the strike of the vein. Take it in this camp, it is not unusual to find several small veins in width about forty or fifty feet in that country. I spoke of a fissure which left the stratas at the end of the lower Hornet cross-cut and runs south. It shows on the wall there and there is not work enough done on it for any man to say that it disappeared. You cannot see into the ground. It runs back in the wall and you cannot see it there. It is between ten and twelve inches in width according to my recollection. After it proceeds on its course it should never strike the Hornet discovery shaft. It might be a fault, apparently it has shifted the position of the vein and the strike slightly. It has made the vein—the pay ore—of a far greater width going east, than it is west. The footwall has got, apparently, no connection with

(Testimony of P. A. Stevens.)

the fault anyway in shape or form that is noticeable. It does not [146] cross the footwall. I could not say that the fissure or fault occurred after the vein formed. It is impossible for me to tell. In a fissure or a fault goes a vein. It is evident that the fissure was created last.

[**Testimony of H. J. Mason, for Defendants.**]

[147] H. J. MASON, a witness duly called and sworn on behalf of the defendants, testifies as follows:

Direct Examination.

(By General NOLAN.)

My name is H. J. Mason. I lived in Silver Bow County, Montana, in the latter part of 1889 until May of 1906. I then left the State. I have been absent there since, excepting during February and March, 1909. I have followed the business of mining and smelting. I have worked in mines as an ordinary miner and I have prospected. My mining experiences began I think in 1891. I began mining here in Butte. I worked in the St. Lawrence and West Colusa and I have helped sink two or three shafts. I first became acquainted with the ground in controversy—the Butte & Boston Placer—in April, 1891. My brother, Louis Mason, was working out there at that time—had men working out there when they were sinking shafts. I remember of three different trips out to that ground starting the first of May, 1891, until the 10th of May, 1891. Grant Pore, Ely Rae, Ab Hudson, and my brother George Mason were working there. I made the first visit after they

(Testimony of H. J. Mason.)

discovered ore. When I went upon the ground in the first place I knew of the existence of two quartz locations on the ground there known as the Pleasant View and Point Pleasant, locations. With reference to the two leads—northerly and southerly—I noticed a shaft probably twenty feet deep on the northerly edge of the land on this northerly lead so called. The other was a shaft probably a little deeper on the south side of the ground near the south line. There were three shafts on the ground when I first visited it that I know of. There might have been more, but I know there were three. One was on the northerly lead and one exposed ore on the southerly lead. I did not notice any ore in the other, it was far down the hill. I noticed that that shaft that I saw there in 1891 was still in existence when I was out there yesterday. It [148] was in an advanced condition yesterday from what it was when I saw it before. It has timbered up. When I was on the ground in 1891, the men were working this lower shaft at the lower part of the ground. There was nobody working on this shaft on the northerly lead when I was there the first time. There is quite a little dump around that shaft and it was of such proportions that any person going upon the ground and using his eyes could readily see it. In that shaft I saw green copper ore, red oxide of copper, and copper and such rock as could be called lead matter. There was quartz running along the bottom of the shaft and likewise on the west and east sides. I did

(Testimony of H. J. Mason.)

not see in the shaft what I would call a lead, it was lead matter.

Q. And what would you say as to whether or not a reasonable mining man with that lead exposed in that shaft there, and with this commercial ore in sight would be justified in locating that ground as mining ground, and spending his money in development?

By Mr. SHELTON.—Let the record show an objection before the answer upon the ground that it is immaterial. A. He would.

The WITNESS.—The material that I saw there was mineralized, copper. As to the discoloration or coloring of the rock, what I saw at that place there was green copper and reddish iron color. The face of the material was quartz. Coming to the south lead I saw men working just a little below, further down the hill, west of the Hornet shaft. The Hornet shaft was in existence at the time, that is prior to May 11, 1891. There were two men working at that shaft at that time. There was considerable of a dump at that shaft and on it I saw evidence of mineralization in the form of copper ore, quartz, red stain, and iron quartz. At that time I went down in the Hornet discovery for the purpose of determining whether there was a lead exposed and I saw what I could call a lead on the north side of the shaft near the bottom and also on the west and east sides of the shaft. At that time the shaft was down 18 or 20 feet. Noticeable characteristics of the lead or the matter that I saw there was the green copper and the red oxide of copper. There was also some sacks of ore that they had

(Testimony of H. J. Mason.)

sacked up laying on the [149] dump and also ore scattered over the dump that they had not taken out. I examined the ore in the sacks to determine if it were merchantable and found that it was very good ore—commercial ore. Those sacks were plainly visible to anybody who wanted to see them. They were lying on top of the dump.

Q. And what would you say as to whether a reasonable mining man with that lead exposed at that shaft there and with this commercial ore in sight there would be justified in locating that ground as mining ground and spending money in its development?

By Mr. SHELTON.—Objected to on the ground that it is immaterial. A. He would.

(Witness continuing:) The way that I am able to fix the time when I made those observations as being prior to May 11, 1891, is that Mr. Rae was going home and he wanted to go home and I went out there while I was working in the Parrot smelter, and that was between the first and the tenth of May. He went home later on in May. When I was out there yesterday I was down in this Hornet discovery and found that its present condition differed from its condition in 1891 in that there has been a cross-cut out of the tunnel northerly from this Hornet shaft. That was not there in 1891. Also this tunnel known as No. 34 was run after 1891,—likewise tunnel No. 31. There is a cross-cut running to the north in that tunnel about 35 feet from the mouth. It gets a well-defined lead in the north raise in the tunnel which contains in my judgment, commercial ore—I made

(Testimony of H. J. Mason.)

an examination of the material in the cross-cut extending from tunnel No. 34 and found what I call a lead, the greater portion of which is commercial ore. I saw the northerly lead again probably thirty feet from where this cross-cut branches off from the tunnel. It cuts through the lead and exposes it. I found there what I consider a footwall. I also noticed it at the breast of the tunnel. There [150] are two little cross-cuts that run off to the north from this timbered shaft which I believe they call the Rabbit shaft and I noticed the lead in that also. Coming back to the southerly lead I found evidence of its existence other than in the cross-cut in the tunnel further in the tunnel, which connects the shaft with the tunnel. I also found evidence of what might be called a footwall in the tunnel further on near the breast. I did not go into the winze.

Cross-examination.

(By Mr. SHELTON.)

I had been in Butte a little over a year before I went out to the ground in 1891. During that time I had been working at the Anaconda mine and the Parrot smelter. Before coming to Butte I lived in Indiana about eight or nine years and during that time I had experience in driving tunnels and working rock for water and gas mains. I shoveled, drilled, and blasted and run a car some while working at the Anaconda mine. I simply worked for wages in the Anaconda mine. At the Parrot smelter I worked in the matte furnace-room, the reverberatory furnace-room. My first visit to this ground in

(Testimony of H. J. Mason.)

controversy was between the first and tenth of May, 1891, after they had begun work there. I made one visit before that time. I fix the date of my visit, my second visit, between the first and tenth of May, 1891, by the fact that there was a man working there by the name of Rae that I wanted to see and he had said that he wanted to go home, but I wanted to see him before that time. Also wanted to see the ground myself after they had discovered this ore. I do not understand that there is any particular purpose in fixing my visit before the tenth of May, 1891. I have never been told that the date of the application for that patent of this ground was May 11, 1891. I testified in a case once before concerning matters that are involving this case. I took an interest in mining but I was not [151] interested in the ground in controversy. I was interested in veins and the observation of veins. Ely Rae and Grant Pore were working with the windlass and a bucket on this shaft below the Hornet shaft. At that time they had a hole there about 18 feet deep. One was windlassing the dirt up and one was taking the dirt and putting it into the bucket. I did notice a vein in that shaft nor could I say whether or not bedrock was exposed for I did not go down. I went down into what we call the Hornet Discovery in the bucket on a rope. There was a windlass there. The shaft at that time to the best of my knowledge, was about twenty feet deep. I do not know how far the shaft was down in bedrock. They had there what I would call a vein. I do not remember whether I saw any

(Testimony of H. J. Mason.)

walls or not. I did not pay any particular attention to that at that time. I was looking at the ore and digging it out. The nature of the material that I saw there was quartz, copper ore, and decomposed lead matter. The quartz and ore were running across the north side of the shaft and a little west of the shaft near the north side. It occurs on the west side and also on the east side. It was below bedrock, I suppose, and in the rock. I could not say as to the width of this ore. There was some Red Oxide of copper and green copper ore in it. I know where both those shafts were and I was able to locate them when I was out there the other day. When I first visited the ground, prior to May 10th, 1891, that northerly shaft was about twenty feet deep. I do not remember whether there was a windlass there or not. I do not think anybody was working there at that time, the shaft was not timbered nor was there a cross-cut. There was a vein there disclosing green ore and Red Oxide of copper. I saw that in the bottom of the shaft and scattered through it. I examined that shaft again yesterday but I could not say whether the same green oxide is there or not for the [152] shaft has been timbered. I could not see the walls of the shaft nor could I see the bottom, it is sunk deeper. I went into the cross-cut that runs northward from that shaft. There is a lead in that cross-cut I do not know just how wide it is. I simply picked the ore out and looked at it and examined the lead. I do not know whether that is the same lead exposed there in 1891 or not. The ore that I saw

(Testimony of H. J. Mason.)

there in 1891 must have been in bedrock. The rock was in place—solid, hard rock. There were no indications at that time of a wall, nor anything of that kind, just this rock in place. They were taking it out. It was not stained rock in the country, it was copper ore. If you find a piece of ore in the rock that does not necessarily make a lead. That is not the case in the Hornet shaft, there is a lead, I saw it. Tunnels 31 and 34 were not run in 1891. The thing that directed my attention to the timbered shaft was the fact that there was ore there—copper ore. There was copper ore at this other shaft at the south side. I do not remember whether there was an ore vein there in any other place there or not, it has been so long since I saw it. I visited tunnel No. 34 yesterday and found a lead there. I went in as far as the breast of the tunnel. From the tunnel I passed from the cross-cut over towards the Hornet shaft. I found in the tunnel what I would call the footwall, east of the cross-cut that runs to the Hornet shaft, what we would call a wall. I think the tunnel is north of the vein if it is off of the vein. I was stating that this, in my estimation was the footwall that so dipped that it ran across the tunnel as it came up. In all leads that I have worked in carrying copper ore you will find more or less ore back of the footwall and above the hanging-wall. This particular tunnel might have been run to the north of the footwall and they would still get extra good ore. They may have taken ore outside of the vein. As I stated before, the tunnel was supposed to be run

(Testimony of H. J. Mason.)

vertically. The lead dips. It could dip across this tunnel. [153] They could take the ore out and yet be in the lead and yet the footwall show on the south side of the tunnel. The material in that cross-cut is such as you will find in all copper leads. There is richer ore,—first, second, and third-class ore—the same vein matter. By that I mean something that won't pay to ship—something that we call waste. The color of the material is green copper, Red Oxide of copper, iron stained quartz, what I would call soft granite and vein matter. I think there is bedrock in that cross-cut. The material on either side is well broken up like it is in most all leads. I have seen bedrock two thousand feet below the surface, broken up just as badly. Whether it was due to a fault or some other cause I do not know, it was put here before I was. In the face of the wall in that cross-cut there is green ore, Red Oxide of copper—a great deal of it. I noticed several pieces of Red Oxide streaking in with copper ore. The footwall that I noticed was east of this cross-cut and west. I could not say how far as I did not see it. When I said that they must have had two walls in the Hornet shaft I had in mind the fact that every lead has two walls. I could not say that they had a lead in the Hornet shaft No. 9, but they had ore in place. There might have been quartz mining around in the vicinity but none that I know of 1891. When I said that I saw the ground that was shown, would justify exploitation and development, I referred to May, 1891. I do not take into consideration the fact that since 1891 the

(Testimony of H. J. Mason.)

Pittsont has developed a mine a few 100 yards south of this ground. I disregard that entirely. When I say that the ground would justify exploiting and developing I mean that I would like to have had a lease on it and I would have spent my money there. I would have spent money on the Hornet shaft and also on this one near the north side that is timbered at the present time. I would have spent money on either one.

[154] Redirect Examination.

(By General NOLAN.)

Q. Now, then, what, if anything, do you know about the operations of any placer mines in the neighborhood of Butte?

By Judge BOURQUIN.—Objected to as immaterial.

A. I know of none whatever.

Q. And what, if anything, do you know of any placer mining operations being carried on on this ground, the Butte & Boston Placer?

By Judge BOURQUIN.—Like objection.

A. I never knew of any at all.

Q. How close to this ground in controversy, the Butte & Boston Placer, have you known of any placer mining operations being carried on?

By Judge BOURQUIN.—Objected to as immaterial.

A. Not within two miles.

Q. And in what direction from this ground?

By Judge BOURQUIN.—Like objection.

A. West and northwest.

(Testimony of H. J. Mason.)

Q. In that region of the country over there, have you known of any placer mining operations being carried on, north and south of Silver Bow Creek, or west?

By Judge BOURQUIN.—Like objection.

A. Not south and west, but north and west of Silver Bow Creek.

Q. And the nearest you say to this ground was about two miles?

By Judge BOURQUIN.—Like objection.

A. I said judging right back of Walkerville and in that direction there is about two miles, and that is the closest point I ever knew of placer mining operations.

The WITNESS.—I was asked about the workings of my mind, how it was I could remember some things and do not remember others. It is my experience that some facts stand out prominently and I remember them distinctly, others I forget entirely. On the surface of the ground over there, I can keep in mind the points of the compass, north, south, east and west, but when I go down through a tunnel that winds around a little, it will mislead anybody. Now this tunnel has its openings towards the west. As you go through the tunnel the north side would be on your left and that is going into the mouth of the tunnel. I observed this footwall on the right-hand side. On the right-hand side beyond this cross-cut quite a distance I do not remember how far. There is quite a streak of formation exposed there that would suggest that it is a wall. I saw lots of stuff like Defend-

(Testimony of H. J. Mason.)

ants' Exhibit 36 in the Hornet shaft in 1891. There was also lots of it on the dump there. The ore that was in the sacks was richer than this. This Exhibit 33 is a good sample of what I saw in shaft No. 9 in 1891. That is what I would call lead matter. It was in place in the rock, I picked it loose. I said that I would be willing to spend my money on shaft No. 9 because of the ore disclosed there in 1891, and had I procured a lease I would have run the cross-cut both ways from that shaft. In the light of my experience I do not think I would have had to run but a very short distance until I would strike this lead.

By Judge BOURQUIN.—Object to that last statement as a mere [155] guess on the part of the witness, speculative, incompetent and immaterial.

Recross-examination.

(By Mr. SHELTON.)

I suppose that ore would be visible in that timbered shaft at the present time if you would take the timber down and look for it. The cross-cut that is there now to the north disclosed a lead and also what I would call a wall. I knew the lead when I came to it there in the cross-cut to the north. There is a rich body of ore there. There must be a foot or a hanging-wall there somewheres by this rich body of ore—I do not say there is a wall there because I did not see it in the cross-cut. It is not my judgment that there is any possibility of this ore having been formed by circulation of the water from this lead which you say is disclosed in the cross-cut. I did not see any of this any place on the ground above the bed-

(Testimony of H. J. Mason.)

rock except what has been taken out of the shaft. I saw float, quartz and copper oxide that had been taken up from the ground. I have had experience in placer mining but had had none prior to 1891. I took a gold pan and washed out three pans of the earth there. I got my sample from a hole in the ground there and I cannot say whether I took them from one hole or not. The hole was probably eight or ten feet deep. I do not know whether it was in bedrock or not. In 1891 there was a ditch that passed along the upper part of this ground. There was no water in it for any purpose that I remember after I came to Montana. I do not know whether there was any water available for it at that time.

Redirect Examination.

(By General NOLAN.)

I do not know of any placer mining operations being carried on on the Pittsmont ground or on any other ground adjacent to this ground in controversy so that if it was located as placer ground [156] no placer mining operation that I ever saw were carried on.

Q. And in the light of the test that you made on this ground in controversy as to its possessing placer gold, what would you say as to whether the ground in your judgment has any value for placer mining purposes?

By Mr. SHELTON.—Objected to as immaterial, and for the further reason that from the test testified to by the witness it would be absolutely insufficient upon which to base an opinion.

(Testimony of H. J. Mason.)

By General NOLAN.—This evidence is not introduced for the purpose of assailing the patent, but to show the ground having a valuation of twenty-five or thirty-five thousand dollars, that its value does not rest upon any placer gold it may contain, but that it is valuable by reason of the quartz leads that exist there.

A. None whatever. I do not believe that it has any value for agricultural purposes, farming or town purposes.

By Judge BOURQUIN.—Like objection and immaterial.

(Witness continuing:) I do not know of any value this ground possesses for anything save quartz mining. I have found material like Defendants' Exhibit 33 in leads. I do not say that there was not a lead in that shaft through there. I would not have called it a lead yet it might have been a lead. I had not had any experiences in mining at that time that I have now and I would not have called that a lead there. Utilizing the experience I have obtained since then and having in mind the samples I found there in 1891 I would say that that material is a lead or joining a lead.

[Testimony of Samuel T. Jones, for Defendants.]

[157] SAMUEL T. JONES, duly called and sworn on behalf of the defendants, testifies as follows:

Direct Examination.

(By General NOLAN.)

My name is Samuel T. Jones. I live in the city

(Testimony of Samuel T. Jones.)

of Butte where I have lived for twenty-three or four years. During these 24 years I have worked at a good many different things—worked in the smelter awhile, carpentry and mining. The first work I did after going to Butte was work in the smelter. I continued at that for something like ten years. After that I did some mining on the mines here in Butte, also prospected some of them myself over in Jefferson County and around Silver Bow County. I at once became acquainted with the ores in Butte and their peculiarities about the year 1891. I was handling a good deal of copper ore at the Parrot smelter. My acquaintanceship with copper ore was such that I could tell whether a piece of rock contained evidence of copper or copper ore. There are different colors indicated in copper and I have an acquaintance with what is known as Oxide of copper and sulphite of copper. I was acquainted with Mr. Mason before he came west. The first that I knew of his working upon this ground in controversy was in 1891. I happened to get acquainted with it, because Mr. Mason was having some work done on the ground and one or two of my room mates were working for him and I had no steady job just at that time and I would go out once in a while during the day—for a walk out. I was first on the ground prior to the 11th of May, 1891. There was work being done there at that time. I testified in those proceedings in the year 1900. There were two or three openings upon that ground before the first of May, 1891. I think about three shafts were being sunk at that time.

(Testimony of Samuel T. Jones.)

These shafts were sunk on what has been referred to as the north lead. I believe that there was one shaft being sunk on the southerly lead known as the Hornet discovery [158] lead down beyond the west side of the ground to Pleasant View. There were men working on the ground about the first of May when I was down there. Grant Pore and Ely Rae were sinking the shaft on the southerly lead when I first made my trip to the ground about the first of May. I think probably that they sunk what is known as the Hornet discovery shaft. I went out there pretty nearly every day for three or four days. I was not there when they quit work. North of each other those shafts were mostly in an easterly direction—southeasterly and northwesterly. Speaking in the light of the knowledge I now have, I would say that the rock on the dump at that time was mineralized rock. I went down into the so-called Hornet discovery and saw evidence of a lead there. It was good-looking copper ore to me. They had some ore sacked up on the dump on the Hornet discovery and in the light of my present knowledge of ore I would say that the ore in the sacks was commercial ore. This ore was there in those sacks prior to May 11th, 1891. Speaking of my recent visit to the ground I have been in four or five of the shafts that now exist on the north lead, also the tunnel. In my judgment there is disclosed in those openings what I would call a lead, but not anything that I could call walls. In this tunnel on the north lead I found a ledge of ore exposed to view for a distance of thirty

(Testimony of Samuel T. Jones.)

or forty feet. The strike of the lead as disclosed in the tunnel as I stated before was in a kind of south-eastern direction and northwesterly. In my judgment the ore disclosed in tunnel there is commercial ore. In my judgment the lead that I saw in the shafts and in the tunnel is one and the same lead. The ledge in the Rabbit claim is not the same ledge disclosed in the Hornet shaft. I found evidence of a lead in the Hornet tunnel. I examined the cross-cut from the Hornet tunnel and the Hornet shaft and went some distance up from the bottom. I also examined the cross-cut or the drift from the bottom of the [159] Hornet shaft running in a northeasterly direction. There is ledge matter between the Hornet tunnel and the Hornet shaft on this upper cross-cut. All that matter is not commercial ore, it would be by sorting it. That has to be done with all the ore here in Butte with which I have had experience.

Cross-examination.

(By Judge BOURQUIN.)

Speaking of directions there, this tunnel No. 31, the Butte & London would be in a northerly direction, the Montgomery Hoist would be south, and the Hornet Discovery would be a little east from south. In these openings on the north lead I did not see what I would pronounce a wall. These openings are in a comparatively regular course or direct line one from another. Those openings are from fifty to one hundred feet apart and I believe that they are so close together that they are on the same lead. I also

(Testimony of Samuel T. Jones.)

think it is the same lead, from following this ledge in the tunnel about fifty feet. You can probably find some ore on both sides of the tunnel throughout its length, but the main body is on the north side of the tunnel. It runs clear across the shaft on the bottom of the tunnel. It does not run clear across the back of the tunnel. There appears to be some on the north side. In the openings west of the tunnel—northwest of tunnel 31, on the same lead—I saw in them some good looking ore of a greenish color, the same as was in the tunnel. In the two or three shafts north and west of tunnel 31, on the north lead I saw what I would call merchantable copper ore. I have never been approached nor has it been mentioned to me that May 11th, 1891, is the vital date of this case. I went to work at the Parrot smelter on the 11th of May, 1891. Since then I have worked in the Tramway mine, the Rarus and the Sunnyside. Prior to May 11th, 1891, when I went to work at this Parrot I was helping a man run one of those steam wood saws. I do not remember the day I started to work at either the [160] Tramway, Rarus or the Sunnyside mine. There was a shaft near the west side of the ground in controversy when I first went there in May, 1891, down towards the Pittsmont fence. There was no work being done on it at that time. At that time two men by the name of Pore and Rae, were working about four or five hundred feet east of that. I should call it east. I think that is the shaft they call the Hornet Discovery. It might not have been the discovery at that time, but I think

(Testimony of Samuel T. Jones.)

that is what they call it now. After May, 1891, I was probably not out on that ground for a year or two. Since then I have been doing a lot of work out there off and on different years for Mason. There are quite a good many shafts around what they call the Hornet Discovery, and I distinguish the shaft that they were working on in May, 1891, from the others, because I have been noticing the shafts being dug before and since, and so on. After I went to work on the Parrot in May, 1891, I did not go back to the ground at all. At that time I was rooming with Mr. Rae. He did not work over there long after I went to work at the Parrot. He worked some at the Parrot smelter after he quit along the ground in controversy, but I could not tell how long. I do not know when he quit working on the ground in controversy and went to work at the smelter. I do not know how long it was after I commenced working at the smelter that he started in. It might be something like two weeks. I last examined the ground in controversy something like two and one-half or two weeks ago. The last time I saw the Hornet shaft in May, 1891, I think it was about sixteen feet deep. It might have been about four days before I went to work at the Parrot smelter, that I last saw that shaft. I think a man by the name of Hudson worked with Pore and Rae at the time I was out there. They were working at the Hornet Discovery some of the time I was out there, but not all the time. I answered on direct examination that the first time I went out on the ground in controversy [161] was

(Testimony of Samuel T. Jones.)

somewhere from May 2 to May 10th, 1891, as that is about as near as I can come to it. I visited the Hornet shaft when they first started in. That was the first time I went out when Mason had just started in. He started digging it himself. I was there when he first put a pick around. Pore and Rae at that time were rustling around for work, but they were not on the ground. I think it was not more than two days after that, before we began working there. I think they went down about fourteen or fifteen feet in the Hornet shaft the last time I saw it in May, 1891. I could not say whether they got into bedrock; the last time I was there they had just struck this ore. It was running on the north side. I did not see the wall. It was about eighteen inches or two feet high and about twelve or fourteen inches wide on the top. It run clear across the length of the Hornet shaft from the east to the west side. The ore disclosed there was green ore—copper ore. I went down in and looked at it. The best of the material in the shaft is what I would call ledge matter. There might have been a little granite in it; I do not think there was much granite in it at all. I saw no wall or ledge that was exposed on the north side of the shaft. I did not notice how deep the ledge was at the commencement of the bedrock at that time, nor have I since. They had a windlass up at that time. They were picking and shoveling. This ore looked like good ore to me. It was quartz. I think there was some copper oxide in it. I can recollect they had some, but I do not recollect how much. I

(Testimony of Samuel T. Jones.)

do not think Mr. Mason worked over two days at the Hornet shaft after he started it. I never went out with Mason again. I think it was two or three days after I went out with Mason, that I went out and saw Rae and Pore at work. I think there was another opening near the Hornet shaft the time I was out there in 1891, which I think was east. I did not see anyone working out there. It was at that time, probably six or eight feet deep. It had been [162] dug deeper and washed in. It looked to be old workings, as I could not see what was in it. I think that I continued to room with Rae until he went east in 1891. We were not on the same job at the smelter. He worked in the reverberatory and matte furnaces. I think that was after he quit working with Mason to the best of my recollection. I do not remember when he went east. Mr. Hudson and Mr. Williams were also rooming with us at that time. I am not any relation of Mr. Mason. I knew him in Indiana. We run together a good deal when we were young.

Redirect Examination.

(By General NOLAN.)

I think that Mr. Rae roomed with me all the time that he was here in Butte. I would not swear that he worked at the smelter after he quit working for Mason. To my knowledge he was only working on the ground in controversy for only a short time. This opening in that westerly portion of this ground, which we were discussing, was an old opening at that time. I did not see anybody working in that hole. This hole was partly filled up, I think it was on the

(Testimony of Samuel T. Jones.)

Pleasant View ground. I think it was about twenty feet east of the Hornet shaft. I was not back to that ground for a year or so for the early portion of May, 1891. Since that time I have worked there different times doing representation work.

Q. During all those years you were upon the ground and during all the time you were there did you know of any placer mining being carried on there?

By Judge BOURQUIN.—Objected to as incompetent and immaterial and not recross-examination.

A. No, sir. I never knew of any.

[163] Q. As it would appear to you as a miner without having this expert knowledge, I will ask you whether or not the ledge matter or lead was of such a character in each one of those leads as to justify you as a mining man—a reasonable mining man—in locating the ground and working it with the expectation of developing a mine?

By Judge BOURQUIN.—Objected to as incompetent in that it is vague and indefinite. What lead and what opening is not specifically pointed out, and it is impossible to determine whether the witness is asked about the exposure in 1891 or what has been disclosed in Tunnel 31 and other workings.

A. I would.

Recross-examination.

(By Judge BOURQUIN.)

The WITNESS.—I did not see any mine worked to the east of the ground in controversy in May, 1891, nor did I see any shaft when there at that time, in-

(Testimony of Samuel T. Jones.)

dicating working a mine. I did know a mine in the Butte district from the ground in controversy in May, 1891.

By General NOLAN.—We object to the foregoing as not a proper examination and we further object to this line of inquiry without specifically interposing an objection to each question, as not being proper examination.

The WITNESS.—I base my opinion that the ground in controversy would justify location and development at that time from the showings in the different shafts upon the northerly and southerly lead.

[Testimony of Ernest Watson, for Defendants.]

[164] ERNEST WATSON, duly called and sworn on behalf of the defendants, testified as follows:

Direct Examination.

(By General NOLAN.)

My name is Ernest Watson, and I am a mining engineer. I took the mining course at the University of Utah—graduated—taking mineralogy and geology and all the studies in mining engineering. Aside from that, I have actually worked in the mines, and am doing so at present. I worked in the mines in Park City, Utah, and here in Butte. I took a course in the economics of geology and areal geology. I worked in the Speculator mine here in ore that contains copper values. I made an examination of the ground in controversy from the 15th to the 17th and from the 19th—to two or three days later in Decem-

(Testimony of Ernest Watson.)

ber, 1911. Last visit I made to this ground was yesterday. I am acquainted with this ground in controversy, the Butte & Boston Placer. Speaking of the character of this surface and the bedrock, I would say that towards the east end the bedrock comes to the surface, but most of the ground is covered with wash, varying there from a depth of nothing at the east end to one hundred and ten feet at the west, and I guess it would go as high as 500 feet near the Pittsmont. The surface of the ground is a very gentle slope. I made an examination of the ground, and as a result of the observation and examination I made, I would say that there are two leads, at least two. For the purpose of reference and identification, I will speak of them as the northerly and the southerly leads. The excavations and cuts which came to my notice in reference to the northerly lead are tunnel 31, the Rabbit Discovery, shaft No. 9, No. 1, No. 2 and No. 21.

Q. At any rate, the indications are that placer mining operations were carried on there or were not the indications that placer mining operations were carried on there?

By Judge BOURQUIN.—Objected to as immaterial; all these like questions.

A. They were not.

The WITNESS.—Shaft No. 21 is a vertical timbered shaft. It is about 110 feet deep. I was down in that on one occasion. In this shaft, they are not so very far below bedrock [165] and it is very hard to determine whether there is lead in that shaft

(Testimony of Ernest Watson.)

or not. It is more or less of an altered rock in that shaft, besides the shaft is timbered and you cannot see—then there is aplite in that shaft. I did not get a sample from that shaft. Speaking of aplite, it is a rock of the granite family and contains a quartz and feldspar, supposed to be lacking in mica. There is more or less snow on that dump at the time I was there but around the dump you will find a little green stained rock. This shaft is timbered within twenty-five feet of the bottom. This green-stained rock would give some evidence of a mineral in the form of copper—that is, not as a metal but as a mineral—carbonate or silicite. As to the character of the rock that is there—you could call it granite—but you may call it aplite if you wish. I also noticed that there is quartz. Quartz differs from granite in that it is not feldspar or mica or horn-blend or material of that sort. You are likely to find quartz in the case of vein material. The total length of tunnel No. 31 would probably be twenty-five feet. There are two cross-cuts shown there, one going north and one going south. The tunnel is projected further after you leave those cross-cuts and in its projected course there is an offshoot to the south. In the north cross-cut there is a good showing for a lead—there is a lead. You encounter this about twenty feet from the point of departure from the tunnel proper. I noticed that the cross-cut had been driven about six and one-half feet further than it was when I was there the first time. The additional cut shows ore nearly the whole length. That is, streaks of ore right up to the face.

(Testimony of Ernest Watson.)

Speaking from its appearance and from my knowledge of its value, I would say that it is commercial ore. I have a sample from there that assays 10 9/10% copper for one foot, that is the footwall for one foot wide. There is a footwall shown there and I would not say there is a hanging-wall because the face is in ore yet. I obtained [166] a sample for this assay. I have a rock-mining pick or sampler's pick, and I also have a sort of a bag arranged where I pick a little off each portion of the vein. So I cut across one inch or two all the way across, so this sample is accurate. The width of the material from which I obtained this sample was a foot wide at that place. After I obtained this sample I took it to Mr. Hocking. He is the assayer at the Rombauer firm and had it assayed. It was marked No. 13 when I turned it over to him and in due course of time I got a return. He is engaged in the business of assaying. I have one sample here aside from the one I had assayed. This sample I have in my hand was obtained within that one foot streak which I assayed. I would call that chrysocolla with some carbonate or malachite in it. That is the material that you encounter in the oxidized zone of copper leads. You might say that it has a granite base. That sample is rich in copper ore. It will go about ten per cent copper.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 40.

(Witness continuing:) I made a further exam-

(Testimony of Ernest Watson.)

ination of the material in that cross-cut to the north in that tunnel. It is now $6\frac{1}{2}$ feet further in than it was then, that is measured yesterday about noon. I did not take a sample of the material disclosed in the new work, but its character would compare favorably with the sample that I took before. I would say that the footwall is continuous in that cut as I saw it to the end of the cut, that is, it is not one solid body, but it is more or less broken up, you know, with stringers of ore. I would say that in its entirety it is lead matter. The entire lead shown, probably assays very little less than 10 per cent. The entire body as it exists there in that cut I think is commercial ore. Judging from the appearance of the lead there it has a strike of northwest and southeast. Its dip is toward the north at that point. After leaving the cross-cut I [167] went into the tunnel there to a point 33 feet from the mouth of this cross-cut to where the lead shows again on the side of the tunnel. I sampled there and had it assayed. There a lead was cut by the tunnel going in and it cut into the footwall where the footwall was shown in the back. The hanging-wall was not shown. There was ore all over the north side of the tunnel. The thickness of the ore was exposed there so that you could get at it. It was one foot thick, that is where I took my sample for the assay. But the ore beyond that was thickest where you could not get into it without doing some work. The wall was more or less discernable. I took the sample to Mr. Hocking to have it assayed. It went $2\frac{2}{10}$ per cent cop-

(Testimony of Ernest Watson.)

per. I obtained the sample assayed the same as I did in the other case, took all the material right across. I also obtained the sample that I have here for the purpose of exhibiting the mineralization of the lead there in the tunnel. I would call it chrysocolla. The base would be granite, I think. The sample would go better than 2 2/10 per cent. This black stuff that appears in the sample would probably be oxide of copper; some of it might be copper stain. This piece would go over five per cent copper.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendant's Exhibit No. 41.

(Witness continuing:) In most cases the material obtained from the veins in the mines is sorted when being shipped. In this instance in obtaining the samples for assay purposes I did not do any sorting I took everything in the lead. Proceeding from this tunnel No. 31, the ore showed continuously on the north side and in the bottom of the tunnel where it is left, until you get 57 feet from this north cross-cut there is a north and south fault comes in there. I think that fault had something to do with the displacement of the lead. I consider it more or less as a dip fault which has thrown the vein. That is the west end of it, more to [168] the south. In mining, the fault is a fracture accompanied by dislocation. In the absence of any fault the lead is more or less regular in its strike. These displacements sort of make a lead jagged, that is if it is between

(Testimony of Ernest Watson.)

faults, why the strike will be straight, then it would be jagged again—that is it makes a broken line out of a straight line. If there is a straight line streak for certain distances and no fault shows, you are reasonably certain that it will follow that same straight line. Going further beyond this fault in Tunnel No. 31 until you get to the cross-cut going south here at that point the lead is in evidence again. There is a little projection next to the face of the tunnel. On the north side opposite that south cross-cut, one could obtain a sample at least $2\frac{1}{2}$ feet wide. I did not obtain any sample at that point however. The mineralization is very similar to that shown further west. In the face of the tunnel there is one small body of high-grade ore on the back. I did not get a sample from that, I only got the two sets of samples. In this cross-cut I obtained another sample for assaying and for no other purposes, when it was only $2\frac{1}{2}$ feet beyond the footwall streak. I got an assayer to turn out that. It only went $\frac{7}{10}$ of one per cent. It is $2\frac{1}{2}$ feet wide. After leaving this tunnel I went to the Rabbit discovery shaft. This is a shaft eleven feet deep and at the bottom of that tunnel a drift runs in about three feet from the west. I found evidence of the existence of a lead in that shaft. I took a sample of what ore was shown there. The strike was from three to six inches wide. It went $7\frac{1}{10}$ per cent and marked as sample No. 12. The strike in that shaft was north and had the strike of northwest and southwest. The dip was towards the north. That was all the lead that was

(Testimony of Ernest Watson.)

visible in that cut. That was the width of the lead as it existed in that cut. Some work will expose more ore there. The drift runs to the west showing a streak of ore there 36 inches wide, all good ore that will go as [169] high as seven per cent copper. It is the same vein. After leaving the Rabbit discovery I went to the shaft No. 1, as shown on Defendant's Exhibit 1. These shafts are marked similarly out there on the ground. Shaft No. 1, is a timbered shaft but 21 ft. deep. One set of timber in that shaft. I went down into it. As to whether there was a lead in existence there the rock in that shaft is a sort of disintegrated altered granite. There is a quartz-bearing seam in there which trends northwest and southeast that is shown—on the north and east sides of the shaft. The only evidence of mineral there is that it is quartz streaks as shown elsewhere. There is no high-grade rock shown in that shaft. Its existence there in the condition in which it is and presenting the evidence of mineralization that it does, it would suggest to me as a geologist that it is a lead. A lead has a more or less metallic or metaliferous mass differing materially from the inclosing rock. After leaving shaft No. 1, I visited shaft No. 2, that is shown on the map Defendants' Exhibit No. 1 and so marked. It is about fifteen feet deep. The wash there is about ten or twelve feet deep. From the bottom of that shaft there is a fine-grain rock exposed more or less like sandstone in appearance but consisting chiefly of quartz, and feldspar which elements, or materials are

(Testimony of Ernest Watson.)

encountered in leads. It is really more suggestive of a lead than a lead itself. I made further observations for the purpose of determining whether this was a portion of a lead or not. At that tunnel No. 31 and the other workings to the north or to the east—that is Rabbit Discovery—and shaft No. 9—would give a clue as to where it was. I found there was on the dump material similar to what is found on the bottom. I next went to shaft No. 9 which is a timbered shaft about forty feet deep. About twenty-five feet from the surface there is a cross-cut going north. The lead is exposed in that cross-cut. The south side of the lead would be approximately four feet from [170] the first timber within the cross-cut. The lead has the same strike northwest and southeast. The dip is to the north but there is a fold shown in the cross-cut and the top cross-cut is folded over there towards the south. I found several seams all dipping to the north. Probably the one towards the south might be taken as a footwall but the hanging-wall is not discernible. As to the meaning of walls in mining terminology when we have a fracture two walls are formed, and the wall upon which the material apparently lies is termed a footwall and the wall that hangs over the body is termed a hanging-wall. Where the fracture or a vein is wide it is not a very easy matter to determine where the walls are and in replacement veins it is pretty hard to tell. In the case of a vein itself, there is sometimes what appears to be a wall separating the ore bodies in a vein and you could only tell by cross-cut-

(Testimony of Ernest Watson.)

ting the vein whether or not it is the wall. In replacement veins the walls would be pretty hard to discern because the country rock or wall rock would be so altered. Judging from the exposure of the lead in shaft No. 9, I would say that the strike is northwest and southeast and that the dip is toward the north. That ore from the east side will go as high as five per cent copper. After leaving shaft No. 9, we next went to the Hornet discovery, likewise went into the Hornet tunnel. I examined the material lying at the face of it. I went beyond this so called Mullins' winze. I likewise made an examination of the characteristics of the Hornet shaft and also of the one running from the bottom and also some distance from the bottom. In the Hornet shaft I found ore that could go as high as $9\frac{1}{2}$ per cent copper. I obtained a sample of the ore existing in the Hornet shaft for the purpose of having it assayed. I obtained one sample from the Hornet shaft seven or eight feet from the surface on the north and the sample was taken for a distance of six feet across, that [171] is in a distance going east and west. That sample assayed $3\frac{2}{10}$ per cent copper. This sample was marked No. 4. I obtained the next sample ten feet below that sample from the west side of the shaft for an essay. The width, I think, would be from four to ten inches. That sample went $9\frac{1}{2}$ per cent copper and it is marked No. 5. The sample was taken for a width of four feet, that is a distance of four feet but the ore body would average from four to twelve inches. The sample

(Testimony of Ernest Watson.)

was taken across the distance of four feet and assayed $9\frac{1}{2}$ per cent copper. This is marked No. 5. The next sample was taken directly on the bottom of the shaft from the north side. This sample was taken for a width or distance of four feet. It was an iron stained quartz material which was a little over a foot thick. It assayed $4/10$ per cent and is marked No. 6. The next sample was taken from the drift that runs south or west—it really runs southwest along the bottom in the same kind of material and taken for a distance of $5\frac{1}{2}$ feet. That assayed $45/100$ per cent copper and is marked No. 7. Going back to tunnel No. 31 on the northerly lead, there is a cross-cut running east from the tunnel. I made an examination of the material in that. It is an altered granite. It is not mineralized like the material we encountered in that cross-cut running northwesterly. I next took a sample in the cross-cut that runs towards the north in the Hornet shaft after the first twenty feet—taken on the east side. All the material for a distance of twenty feet was an average sample. It assayed $85/100$ per cent and is marked No. 8. I obtained from that cross-cut a sample for the purpose of showing the mineralization of the ore about 15 feet from the shaft. It is a mixture of copper Oxide and chrysocolla. The base would be granite. That would go far higher than the sample. It would contain probably fifty per cent copper.

By Gen. NOLAN.—We desire to offer this in evidence.

(Testimony of Ernest Watson.)

By the EXAMINER.—I will mark this Defendants' Exhibit No. 42. [172]

(Witness continuing:) You find little stringers of this rich material in that portion of the vein but this rich material is avoided in procuring the sample for assaying. I took the next sample a foot and one-half from that cross-cut from the same side. This last sample was No. 8. This foot and one-half is No. 9 and contains 65/100 per cent copper. I obtained a specimen there showing quartz seams in another body. That was taken 17 feet from the shaft to a little quartz stringer through there.

By Gen. NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark it Defendants' Exhibit No. 43.

(Witness continuing:) There were stringers of this material running from the lead having a north-west and southeast trend. The next sample was obtained thirty feet from the Hornet shaft and was taken across the back across the rich stringer 2½ feet wide. In this bottom cross-cut at that point it would probably be called a drift. I obtained that sample for the purpose of having it assayed. It is marked No. 10 and assayed 6 3/10 per cent copper. I also obtained sample of that material for the purpose of showing the mineralization of the lead there. I obtained three samples instead of one because the sample is hard and is hard to get up enough to make a showing. It is highly mineralized. That base there would go over fifteen per cent copper. It is

(Testimony of Ernest Watson.)

copper Oxide or chrysocolla. I would not say that there was any vein in that. The second sample there is the same, chrysocolla. You might say the vein shown there is granite. The third is chrysocolla still. There might be some malachite in each one of those. It is green similar to the other.

By Gen. NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 44.

(Witness continuing:) I said that the sample I obtained for the purpose of having it assayed was across the back a distance of $2\frac{1}{2}$ feet and the material in its entirety assayed 6 $\frac{3}{10}$ per cent [173] copper. The material on the wall would assay that much too, but you cannot go into that. The next sample is taken in the vein in the drift—was taken for a width of two feet across the back. The sample was taken ten feet from the last one. It is marked No. 10 and assayed nine per cent copper. I also obtained a sample there for the purpose of showing mineralization. I have three samples, each one being slightly different from the others. There is more quartz in this one marked 1 with the pencil than in the other two. Some of the reddish stuff in this sample, marked 2, would be limonite. It is a hydrate of iron oxide. There is plain oxide of copper in there too, and the green would be chrysocolla and malachite. The third vein is a higher grade than the other two. It carries chrysocolla and cuprite. Chrysocolla is a copper sulphite contain-

(Testimony of Ernest Watson.)

ing water crystalization.

By Gen. NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit 45.

(Witness continuing:) We next went to the upper cross-cut which connects the tunnel with the shaft. The first sample I obtained there was taken the first five feet in the Hornet tunnel on the east side going from the Hornet tunnel. South of the Hornet tunnel on the east side. That sample assayed 1 95/100 per cent copper, and is marked No. 1. I also obtained a sample for the purpose of exhibiting it here. This specimen marked No. 1 was taken five feet south of the Hornet tunnel in the bottom. That specimen is rich and is made up from the sample, it is a rich stringer itself, along the bottom. It was in a rich streak. It is richer than the material from the assayed sample and is taken from the bottom of the cross-cut. In my judgment that would go twenty per cent copper. You find some quartz in there. The returns of this sample that we assayed will show the silicate contained in samples.

By Gen. NOLAN.—We desire to offer this in evidence.

[174] By the EXAMINER.—I will mark this Defendants' Exhibit No. 46.

(Witness continuing:) The next sample was taken for the second two feet, that is it would be nine feet beyond the first sample going closer to the shaft on the east side. I took one sample for assay

(Testimony of Ernest Watson.)

and one for the purpose of showing the material. That sample went three per cent copper and is marked No. 2. The sample showing the mineralization would go much higher than the assay, perhaps fifty per cent copper.

By General NOLAN.—We will offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 47.

(Witness continuing:) The next sample was obtained from the next eleven feet on the west side and I went on the west side because there was a filled shaft on the other, next to the shaft. That was the last and that sample was taken right from the bottom. It assayed 2 3/10 per cent copper and is marked No. 3. I also obtained a sample there for the purpose of showing the mineralization of the material. It was taken nineteen feet from the Hornet tunnel so it would be within a distance sampled. It is copper oxide or chrysocolla. It is much richer in copper than the sample assayed. It would probably go 45 per cent copper.

By General NOLAN.—We will offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 48.

(Witness continuing:) The next specimen was obtained from the face of the footwall drift that is the Hornet tunnel itself, going in the east. The face of the Hornet tunnel itself beyond the Mullins winze. That sample was taken there very close to

(Testimony of Ernest Watson.)

the vein more or less down towards the bottom. As to the appearance of the material in the face of the tunnel, why right at the face, the streak has all worked down considerably but it is from six inches to a foot wide there and there is an appearance of a hanging-wall there. I obtained the sample from a streak six inches wide. It contains only minerals—quartz—chrysocolla and limonite, and you might [175] say it had a granite base.

By Gen. NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit 49.

(Witness continuing:) My next specimen was obtained 24 feet west of the tunnel on the south side of the winze. It contains chrysocolla, copper oxide, and cuprite.

By General NOLAN.—We desire to offer this in evidence.

By the EXAMINER.—I will mark this Defendants' Exhibit No. 50.

(Witness continuing:) My next sample was obtained in the tunnel on the north side, 71½ feet from No. 9. That sample is chiefly copper oxide and chrysocolla. It is quite highly mineralized. That piece, in my estimation, runs about 45 per cent copper.

By General NOLAN.—We will offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 51.

(Testimony of Ernest Watson.)

(Witness continuing:) I got one more specimen which was taken thirty-two feet west of the cross-cut going to the Hornet shaft on the south side. It is a little more altered than the others and contains chrysocolla, copper oxide and a little quartz. You might say it has a granite base.

By General NOLAN.—We will offer that in evidence.

By the EXAMINER.—I will mark that Defendants' Exhibit No. 52. I will mark this paper Defendants' Exhibit 53 for identification.

(Witness continuing:) Defendants' Exhibit No. 53 is a return of Mr. Hockings who has assayed all the samples I gave him, of which I have been testifying here. I did not find any evidence of a wall in the Hornet discovery shaft but in this drift that runs southwest there is a talcy seam which might be taken for a wall but there would be no more use in taking it for a wall than in some of the others. The true footwall is not shown there because you can get mineral out of what is shown there as a footwall now. Take it from the Hornet discovery shaft in the cross-cut leading from the shaft to the tunnel where I obtained the samples about which [176] I have testified, I would say that that is a lead throughout the entire distance. It contains commercial ore. There are rich and poor streaks from a distance of the Hornet shaft to the so-called footwall, about the main filling in between there is a granite which probably contains values due to the leaching and replacement. The lead itself, in the

(Testimony of Ernest Watson.)

tunnel is disclosed for a distance of perhaps thirty-eight feet from the portal. I don't think that there the hanging or footwall is disclosed in the Mullins tunnel because on both sides of the Mullins shaft on the south side there is ore in the so-called wall and just west of there where you could obtain good samples on the north side. I do not think that there is a wall shown at that point. Speaking of the northerly lead to which I have referred, I think the openings there disclose one and the same lead. In my judgment the lead that is disclosed in the Hornet discovery is the same lead that I encountered in the cross-cut in the tunnel. The course of the Hornet lead as disclosed, is quite regular. I do not think that the lead ends where it appears as you enter the tunnel and I am positive that it does not end at the face of the tunnel for the reason that the ore is six inches to one foot wide right there at the face. As to whether I would make a distinction between ore and lead matter—if I should take the definition of ore that it is a mineral that could be extracted at a profit—then I would, the lead matter being a vein filling of a lower grade than ore. In my experience as a miner I do not always find a vein filling equally charged with values. I was in tunnel 36, this drift going towards the east. The first cross-cut in the tunnel shows that it is an altered granite there going in these others and continuing on in the tunnel, why you would find aplite, and iron stained material which is itself evidence of a vein. There is no high value there. Tunnel 35 is in wash nearly its

(Testimony of Ernest Watson.)

entire length. You just do get to bedrock in that tunnel which is aplite. I was also [177] in a shaft about 80 feet deep southwest of this tunnel No. 19. I think it just goes to bedrock. It is timbered most of the way right to the bottom. There is talc shown in the bottom and there is also an altered granite. I have no direct evidence that the material shown in No. 36 or material shown in shaft No. 19 has anything to do with the lead I encountered in the Hornet discovery, except that you get some slight green color out of shaft No. 19. That, in my judgment, why it is pretty near the vein matter right along from those tunnels.

Cross-examination.

(By Mr. SHELTON.)

I am 24 years of age and graduated last June from the State School of Mines in Utah, and before I entered the School of Mines I had had practical experience in mining. I lived in Park City, Utah, which is a mining section, but is different from the Butte district, the ore that is mined there is practically lead and silver. As a rule, the veins are different from the veins here; however, there are fissure veins there just as there are here. After graduating I took a position as a practical miner; I have worked in the Butte district twenty-nine months before graduating from the School of Mines in Utah. I worked in the Speculator mine. My work there gave me a direct knowledge of the mining industry. It did not call upon me to make use of my judgment upon development work.

(Testimony of Ernest Watson.)

Q. When you first undertook to determine the different kinds of rock, that is to determine what was aplite and what was quartz, were you always able to determine?

A. No, I might be fooled yet on some rocks.

Q. And the longer you live and the more experience you have, the better you are able to judge, aren't you? A. Certainly.

The WITNESS.—I became acquainted with the ground in controversy the 15th of December, 1911; then, and ever since, the ground has been continuously covered with snow, so that I only saw the surface of the ground where it was exposed in the cuts. About 300 yards easterly of the Hornet shaft bedrock comes to the surface. You can find pieces of float exposed on the surface here and there. Float is a portion of the vein matter that has been washed down, been carried down by the process of erosion. It is good evidence of a vein somewhere near there, and if the boulders are large and the slope is gentle, the vein would not be far away. [178] The distance of the vein from which the float came, from where the float was found, would be merely a matter of speculation. I did not find any copper ore in shaft No. 1 and No. 2. In shaft No. 1, I found a streak of quartz which runs from one-quarter to one inch in width, which is at the northwest and southeast trend.

Q. Shaft No. 9, you examined? A. Yes, sir.

Q. In shaft No. 9 did you find any vein except in the cross-cut to the north? A. No, sir.

(Testimony of Ernest Watson.)

Q. Now, in shaft No. 1, you examined, or rather did you examine shaft No. 1? A. Yes, sir.

Q. What is the depth of that shaft?

A. About 20 feet.

Q. Did you find a material there that you brought in a sample of? A. No, sir.

Q. You brought no sample from that shaft?

A. No, sir.

Q. You took no sample from that shaft to have it assayed? A. No, sir.

Q. And you say you did find something in the bottom of that shaft?

A. I said I found a quartz seam that had a north-west and southeast trend.

Q. A quartz seam? A. Yes, sir.

Q. That is a seam of quartz? A. Yes, sir.

Q. And when you say it is a seam you mean that the material around it is of a different character?

A. Yes, sir.

Q. And what was the material in which you found the quartz? A. Aplite.

[179] Q. You found the quartz in aplite?

A. Yes, sir.

Q. How much aplite did you find there?

A. Well, I think with the exception of this one seam of quartz it is nearly all aplite.

Q. Nearly all aplite? A. Yes, sir.

Q. And what do you mean by nearly all, do you mean for the entire bottom of the shaft?

A. Yes, sir.

Q. What is the size of the bottom of the shaft;

(Testimony of Ernest Watson.)

what are the dimensions of the shaft?

A. Four by four, about that.

Q. What is the material on the walls of the shaft?

A. That is the same up to a considerable distance.

Q. How far up.

A. At least six or eight feet.

Q. And the depth of the shaft is what?

A. Twenty.

Q. And those 6 feet up would be 14 below the surface? A. Yes, sir.

Q. And above the four feet—and above the six feet what did you find?

A. I think the timbering comes down about that far.

Q. You could not tell what kind of walls?

A. No, sir.

Q. Did you see any granite in that shaft—shaft No. 1? A. Not as I recollect.

Q. You saw no granite? A. No, sir.

Q. How wide is the streak of quartz there?

A. Oh, from a quarter of an inch to an inch.

Q. In what direction does it run?

A. It has a northwest and southeast trend, shown on both sides, [180] on the east and west sides of the shaft.

Q. How far from the northwest corner did you see that streak? A. From the northwest corner?

Q. Yes.

A. It would be closer to the southwest corner than to the northwest.

Q. Closer to the south side than to the north?

(Testimony of Ernest Watson.)

A. Yes, sir.

Q. On the east side of the shaft how near to the southeast corner did you see it?

A. Quite close to the southeast corner.

Q. But how far from the southwest corner?

A. How far from the southwest corner?

Q. Yes. A. About a foot.

The WITNESS.—Aplite is a fine-grained rock of the granite family consisting chiefly of quartz and feldspar. That is one definition, and the older definition is that it has muscovite granite.

Q. When you are speaking of vein matter and country rock, which is it, vein matter or country rock?

A. Aplite is granite with more or less country rock.

Q. It is sometimes called white granite?

A. Yes, sir.

Q. And in this district it is often called Blue-Bird granite? A. Yes, sir.

Q. And it is as distinct from vein matter as granite is?

A. Yes, sir, always holds the same relation to the vein as granite does.

Q. How does it occur—that is does it occur as the gray granite does, or do you find it principally in dykes or in regularly shaped masses or intrusions into the granite?

A. It is in irregular-shaped masses.

Q. Is it ever found in dykes in this district, or is your acquaintance sufficient to enable you to say?

(Testimony of Ernest Watson.)

A. I have not found it in dykes in this district; I would not say.

[181] (The witness further testified as follows:) Quartz is more solid than aplite, because aplite is composed of two minerals. It is a fine-grained rock. The structure of aplite and quartz is different, both are composed of crystals. In the aplite the crystals interlace, that is, both crystals, that is crystals of feldspar and crystals of quartz can be discerned.

Aplite occurs in irregularly-shaped masses. I did not examine the samples that I took with the magnifying-glass to determine whether or not the crystals interlace. I traced the quartz streak in shaft No. 1 about six feet up the side of the shaft; above that is timber. Defendants' Exhibit No. 6 is aplite.

Q. There is no sign. of mineralization there is there?

A. You mean any specific mineralization?

Q. Yes, I mean copper or silver?

A. No, sir.

Q. Or gold or lead? A. No, sir.

The WITNESS.—Defendants' Exhibit No. 5 is also aplite. It has quartz and feldspar and a little brown-stained rock probably due to iron from the mica. No. 5 has a little more mica than No. 6. These samples taken alone would not indicate the presence of a vein, speaking specifically of these samples. I would not call a quartz seam itself a vein. It is not metaliferous.

Q. But the quartz seam that you speak of is what indicates or suggests a vein? A. Yes, sir.

(Testimony of Ernest Watson.)

A. Yes, sir.

Q. On the east side of the shaft how near to the southeast corner did you see it?

A. Quite close to the southeast corner.

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(Testimony of Ernest Watson.)

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Q. But the quartz seam that you speak of is what indicates or suggests a vein? A. Yes, sir.

(Testimony of Ernest Watson.)

Q. And when you say that it suggests a vein, you do not mean that it is a vein?

A. Not necessarily so.

Q. You mean that the presence of the quartz suggests that there might be a vein somewhere in the locality? A. Yes, a good indication is all.

Q. It might be either north or south, or it might be some distance away?

[182] A. Yes, sir.

Q. And as a matter of fact, quartz seams occur in the granite at distances remote from any vein—that is, any veins of considerable size? A. Yes, sir.

Q. You do not call a quartz seam itself a vein, do you? Of course, that is not a vein?

A. Not necessarily so; no, sir.

Q. Now, of course these two shafts that you have referred to, shafts numbered 1 and 2, do not show the vein which you testified concerning in the Tunnel No. 31?

A. No, sir—that is, you do not find the same material there that you do in the other places which I testified to.

The WITNESS.—From the new workings there is a vein about ten feet in width exposed in Tunnel No. 31, and the material of the vein is entirely distinct from these samples 5 and 6.

Q. What is disclosed in 31, you call a vein?

A. Yes, sir.

Q. And what is disclosed in shafts 1 and 2, you do not call a vein, do you?

A. Well, not exactly a vein, but good indications

(Testimony of Ernest Watson.)

of a vein—that quartz seam.

Q. That quartz seam you think is a good indication of the proximity of a vein but is something entirely distinct from the vein itself, that is true, is it not? A. Yes, sir.

The WITNESS.—Material like these samples 5 and 6 form a sort of filling in the vein. You sometimes find aplite within the walls of the vein just the same as you would granite. I call that which is disclosed in tunnel No. 31 a vein. The material disclosed in shafts 1 and 2 were not called veins, but good indications of a vein, that quartz seam is entirely distinct from the vein itself. In tunnel No. 31, I found a vein in the first cross-cut running north also found it further east of the tunnel. In the face of the tunnel; away in—that is in the main tunnel more of the ore is shown towards the south side. There is some question in my mind whether the hanging-wall is exposed near the face; it [183] might possibly be. If it is a hanging-wall here, both walls may be exposed. There is a fault or fissure somewhere in the cross-cut northerly of the face. The vein dips toward the north. The fault is north about vertical. There has been some dislocation on the vein but not to any great extent, because that vein shows again in that cross-cut going south. The effect of faults upon vein is sometimes to displace them because the fault is a fractual dislocation. The fault is formed subsequent to the formation of the vein in these cuts and you have to go into the dynamics of the vein because the force would not be

(Testimony of Ernest Watson.)

great enough to cause a great dislocation, for if there had been some force to move it here it would have moved further. The movement is such that the west end is apparently moved to the south. I think there was a vertical move. You see the vein does not dip at right angles, and the movement could have been considerable. I am not well enough acquainted with the ground to say whether or not there are any faults traversing that ground in the westerly and southerly direction west of tunnel No. 31. If you have a normal gravity fault—a vertical fault—the west side vein would apparently move towards the south. From my observation there I cannot testify how far west the vein in tunnel No. 31 runs; whether it goes in further than the cross-cut there. That is impossible to tell without further work. To be entirely certain you would have to uncover the vein in its entire length, but to give you my opinion I would say that the vein extends further both to the east and to the west. I say that I saw a vein in the cross-cut that is at least ten feet wide. I see no indications of that end pinching out and I am reasonably certain it might go on for any distance, and also from the character of the walls.

Q. But is mere conjecture?

A. That is opinion.

Q. Mere conjecture? A. Yes.

Q. You cannot even give an opinion as to where the vein would be found if it continues to the west?

A. Oh, yes, you could.

[184] Q. Well, where would it be?

(Testimony of Ernest Watson.)

A. Well, I would assume that there were no faults.

Q. Why would you assume that? A. Just on—

Q. From your knowledge of the district?

A. No, sir.

Q. If you—your knowledge of the district teaches you that faults are of very frequent occurrence—that you may expect faults? A. Yes, sir.

Q. And that if you are simply guessing about it you would guess that there would be some dislocation of the vein in that space, would you not?

A. That would be a reasonable guess.

Q. You would give that as your opinion.

A. That there would be more faulting to the north?

Q. Yes. A. Well, it is too much conjecture.

Q. Couldn't venture an opinion either way?

A. Yes, I think there probably would be a fault.

The WITNESS.—I did not make the assays of these samples myself, they were made by Mr. Hocking, and when I was testifying concerning the assays I was simply testifying concerning his returns.

In shaft Number two the wash is about fifteen feet deep [185] and in No. 1 I think it is from twelve to fourteen feet. The bedrock is discernible in the back of the north cross-cut in the tunnel. The bottom of the wash goes from the back of the cross-cut. The rock there is all picking ground, that is you could work it with a pick. The specimens that I brought in here do not represent the most slightly mineralized rock but they are a little better than the average. They were not the best I could find. In taking my samples for assaying I had a semi-circular sack ar-

(Testimony of Ernest Watson.)

ranged onto a ten-inch iron ring with a handle on it, and I used a prospecting pick and I aimed to get a groove from one to two inches wide across the entire length of the vein or width of the vein, taking hard, and soft and rich and poor alike. In shaft No. 9, the cross-cut is about twenty-five feet below the surface. The vein is shown there in the cross-cut. The walls are timbered right down to the bottom on all except the north side I think, which I believe is entirely exposed. The first seam in that cross-cut is exposed about three feet from the first timber. The direction of the vein in the cross-cut is northwest and southeast. The width of the vein has not been determined. If they have any wall there, I think it is a footwall. The bottom of the shaft is all covered up there from the material that has slid down and I could not examine the bottom to determine whether or not there was a vein there. You would have a pretty hard time judging anything back of the timber there through the cross-cut by candlelight. Green does not look very green in the dark, you could not discern it from black.

[Testimony of Horace V. Winchell, for Plaintiffs.]

[186] HORACE V. WINCHELL, a witness on behalf of complainants, being duly sworn and qualified, testified as follows:

The WITNESS.—I reside in Minneapolis, Minnesota; I lived in Butte, Montana, from 1898 to 1906. I graduated at the University of Michigan in 1889 with the degree of Bachelor of Science; I have received no degree since. My occupation is that of

(Testimony of Horace V. Winchell.)

mining geologist and engineer; I have followed that occupation for more than twenty years. I have made some study and examination of the piece of ground known as the Butte and Boston placer recently and several years ago. I am unable to state when I first examined the ground, but I have seen the various developments in progress upon this ground since 1900.

The EXAMINER.—Upon the request of counsel, Complainant's Exhibits Nos. 14, 15, 16 and 17 will be marked for identification.

The WITNESS.—The ground to which I refer is indicated on the map, Complainant's Exhibit 14 for Identification. The ground in controversy in this case, I assume, is bounded by the lines 1 and 2. The ground in controversy in the case is 1, 2, 9, 10 and 11, 6, 7, 8, 1. The boundaries of the Butte and Boston placer, as I understand are indicated by the lines 1, 2, 3, 4, 5, 6, 7, 8, 1. The territory embraced in the Butte and Boston placer has a general similarity in geological structure and contains the same country rock as that found upon what is known as the Butte hill, that is, the portion of the Butte camp which is productive of copper ores. There are one or two important exceptions, and there is a very great difference in the character and origin of mineralization of the two districts. The country rock at Butte is commonly called granite. The Butte granite is a complex, granitic rock, more properly called a monzonite. It contains as its constituent minerals, quartz, lime, feldspar and potash feldspar, two different kinds of

(Testimony of Horace V. Winchell.)

feldspar, called one plagioclase, the other orthoclase. It also contains minerals, known as the ferro-magnesian minerals, that is, silicates of iron and magnesia, commonly called mica and hornblende and augite. This complex granite contains secondary minerals, some chalcopyrite and pyrite, and the copper in the veins is believed to have been derived [187] from the chalcopyrite, cuprite minerals, which is disseminated through the entire mass of the monzonite, in some places in greater quantities than in others. In addition to this Butte granite or monzonite is what is called by the Geological Survey of the United States at the time of its first examination, the Bluebird granite. Its more technical term is aplite. Aplite, briefly defined, is micaless granite, that is, a granite without important mica contents. Its relation to the Butte granite is that of a later intrusive. It has come into this granite in the form of dykes. Its appearance is that of a dense quartzite, and a quartzite is a consolidated sandstone; consequently it is frequently difficult to distinguish at first glance between a piece of weathered aplite and a piece of quartzite. In origin, however, there is a great difference, the aplite being, as I have said, an intrusive rock, having come into the granite in a molten condition, and quartzite being a consolidated, connecting rock. A second eruptive which occurs in dykes, connecting both the granite and the aplite, is quartz porphyry, and the quartz porphyry has played a very important part in the mineralization of the veins of the Butte camp. It is probable that

(Testimony of Horace V. Winchell.)

the copper picked up from the granite and brought into the veins by water was either directly furnished by, or whose circulation was stimulated by the quartz porphyry intrusions. The aplite played no such part, nor is there any increase in mineralization in the vicinity of the aplite, but the reverse. The aplite was here when the quartz porphyry was intruded, and being a micaless rock was more difficultly replaced by the copper-bearing solutions, and therefore, when copper vein passes from granite through and across an important mass of aplite, the percentage of copper in the ore frequently materially declines. The effect of this general leaching or dissolving of the copper from the granite adjacent to the large veins has produced upon that granite a very marked effect. Thus, in cross-cuts in the vicinity of the large mines of the Butte camp, it is common to find the ferro-magnesian minerals to a very large extent removed, dissolved, the granite is softened, and in it has been deposited an extraordinary amount of sulphide of iron, or pyrite. It is customary, in watching [188] the development and exploration in the camp, for the geologists to point to the pyritization of the granite as an encouraging symptom, but when the granite is fresh, solid, unaltered, and free from pyrite there is not such great hope of finding a large and important vein in the cross-cuts. The veins which outcrop in the Butte camp are considerably oxidized and iron-stained, and the granite is likewise decayed and iron-stained near the surface. The produce of erosion of these large outcrops has

(Testimony of Horace V. Winchell.)

furnished important placer deposits through whose discovery and operation the veins themselves were discovered. All around the foot of the Butte hill and in Missoula gulch, there are old placer operations. The veins of the Butte district have been considerably enriched by descending waters. And the products of such secondary enrichment are usually sulphide copper minerals, not oxidized copper minerals. By oxidized copper minerals, we refer to copper oxides, both cuprite and tenorite, to chrysocolla, which is the silicate of copper, and to the carbonates of copper, malachite and azurite. Those are all oxidized copper ores, but they are all present in very limited quantity in the upper portion of the veins of Butte. The vein mineralization below the zone of oxidation is chiefly quartz, vein quartz, or recrystallized residual quartz, and sulphide minerals, pyrite, copper glance, or chalcopyrite, and enargite, or the arsenical sulphide of copper, bolanite, which is the complex copper iron sulphide, and smaller percentages of covellite, and chalcopyrite. The veins also contain notable quantities of gold and silver. This secondary enrichment has left no carbonates of copper for the principal reason that there is no limestone in this district. In a district where limestone is abundant and where copper sulphides have been oxidized, copper carbonates are abundant. There is also very little chrysocolla west of Silver Bow Creek, upon the mail hill, and the principal reason seems to be that there was an excess of sulphuric acid formed by the oxidation of the sulphide, and not an

(Testimony of Horace V. Winchell.)

excess of silicate such as that contained in aplite, where it occurs in abundance. Now, transferring our attention to the district upon the east side of Silver Bow Creek and the west slope of the foothills, just west of the main [189] continental divide, we are struck with two or three remarkable differences in the geology and in the appearance of the rocks. In the first place, that important eruptive to which I referred as having caused the mineralization of Anaconda Hill, namely, quartz porphyry, is almost entirely wanting. In the second place, there is a large amount of aplite intruding the granite in vertical dykes and in sheets at various angles. This aplite, not only east of Silver Bow Creek but west has been by the early prospector sometimes, I might almost say frequently, mistaken for vein quartz.

Mr. NOLAN.—Object to that and move to strike it out. This is simply a statement not requiring expert knowledge. It is simply the statement of a fact concerning which the witness is not competent to testify.

The WITNESS.—I know this of my own knowledge and have seen such locations made upon aplite dykes and abandoned, because of their manifest poverty upon more thorough exploration. There is also over a large section of country north, east and south of the Butte and Boston placer, a very unusual discoloration of the country rock by chrysocolla. The rock is stained green, the chrysocolla has even been gathered together into the little intersections of joints and into fractures which the rock contains. It has entered and discolored and to a certain extent

(Testimony of Horace V. Winchell.)

mineralized the aplite. Its abundance has attracted the attention of all observers. Cross-cuts hundreds of feet in length at no greater depth than fifty or seventy feet show that the entire country rock contains a green discoloration and sometimes little nests of ore and chrysocollax is not the only copper mineral, but there is also an occasional little seam or kidney of cuprite. The origin of this chrysocolla and its importance appear to be as follows: the copper which was originally disseminated through the Butte granite has been changed upon the general surface decay of that granite into the silicate of copper, by reason of the great abundance of aplite, which itself is almost pure silicate. This copper, then, in the absence of important veins or fissures, or shear zones, into which the surface waters might carry the copper and there deposit it as a sulphide mineral, has been disseminated [190] generally throughout the country rock. It occurs there as a discoloration in precisely the same way as the iron occurs in the superficial granite as a discoloration throughout the territory where aplite is not particularly abundant and where the copper has escaped precipitation by the silicate. It occurs in precisely the same manner as a limestone which has rotted, but it contains manganese, becomes black upon the surface. It is nothing but the discoloration of the country rock, due to that subaerial, or surface decay. In addition, however, to this general, widely disseminated discoloration which covers at least half a section of land in that vicinity, there has been some additional concentration

(Testimony of Horace V. Winchell.)

of this chrysocolla along the line or lines of the various planes of fracture of what is known as the continental fault. It is known that there is a large fault composed of various cracks at many feet separated from each other, running in a northwesterly and southeasterly direction, sometimes nearly north and south, just along the foothills. This fault may or may not mark a large discoloration of the earth's crust, but it certainly contained the crush products of the rocks, and among those crushed products was a considerable amount of clay. The copper silicate has frequently impregnated that clay, making what appears to be rather continuous, or solid, little streaks of chrysocolla, but which are not pure chrysocolla, and mining operations have sometimes been extended north and south along this fault, removing the small platings of clay, stained green, and containing chrysocolla. At a few feet below the surface, the amount of this chrysocolla rapidly diminishes. There was a shaft upon the property immediately east of the Butte and Boston placer, called the Pacific. It is marked on that map which was on the board yesterday, "Pacific Claim." I refer to Defendants' Exhibit 1. The Pacific claim, the Western end of it, appears upon Exhibit 1, Defendants' Exhibit 1, and the Pacific shaft, with its cross-cut at two different levels, is shown upon this map. I examined those workings repeatedly, some six or seven years ago, and there upon the surface and near it in the aplite and in the small fractures was an abundance of chrysocolla and cuprite, nothing continuous,

(Testimony of Horace V. Winchell.)

no persistent vein, no genuine vein mineralization. [191] The first cross-cut, as I recall it, was perhaps on the 100 foot level, the second cross-cut may have been 100 or 150 feet below. It passed directly underneath this very large discoloration above, and the granite was almost free from green stains, and as solid and fresh as the finest building stone. There are also in this section one or two, probably one vein which has been mineralized by ascending solutions, mineralized as veins are mineralized, containing vein quartz, containing the evidence of oxidation and alterations of that quartz near the surface. This vein to which I refer is disclosed in the Mullins shaft or winze. It is a south dipping vein, striking a little north of east, from eighteen inches to three feet in thickness, and has been explored to the depth of more than two hundred feet. I have examined the Mullins shaft and the drift from the bottom of it. I have seen that vein when operations were in progress and its size and character are unmistakable. It is not important, but it is a vein. Its width is as clearly defined as that of any vein in this camp. Its walls are regular and below the depth of a hundred feet there is none of this discoloration or chrysocolla mineralization in the country rock adjacent. Having now described generally the differences in appearance and in geological structure of the two parts of this district, one the Butte and Boston placer district and the other the Butte camp, where the copper mines are, I will, if you included that in your question, go into a more particular description. I have

(Testimony of Horace V. Winchell.)

examined the workings shown upon Complainant's Exhibit 14. The first working which I visited recently was shaft No. 1. This shaft is about eighteen and one-half feet deep. It enters the solid rock for a few feet and discloses a very excellent article of country granite. The granite is somewhat decomposed. It is iron stained. There is no aplite of any notable quantity, and hence, perhaps, no discoloration by copper. Shaft No. 1 contains one harder rib of granite, similar to the hard ribs which are found adjacent to joints in the granite throughout the entire district. I have a sample of this hard rib of granite. This sample came from near the bottom of shaft No. 1, from the east side, and represents the only layer or rib of material in that shaft sufficiently [192] hard, or which has resisted weathering sufficient to furnish a sample of that size.

The sample was offered in evidence and marked Complainant's Exhibit No. 18.

The WITNESS.—The brown stain appearing on this sample is the hydrated, sesquioxide of iron, commonly called limonite, which has been derived generally throughout this district, as in all other districts where the granite has decayed, by the oxidation of the iron contained in the ferro-magnesian minerals. It has nothing whatever to do with vein mineralization, nor with the oxidation of sulphide minerals, although the same brown discoloration might be produced by the oxidation of iron. It carries nothing of any commercial value whatever. Referring to Defendants' Exhibit No. 5, that is iron stained and oxi-

(Testimony of Horace V. Winchell.)

dized granite. It appears to have upon one side, and probably along a joint, a little of the anhydrous sesquioxide of iron, called hemachite. It has nothing of value. It is not vein matter or ledge matter. The country rock in the Butte district contains minute quantities of copper everywhere. It is difficult to produce a sample of granite from this district which, upon assay, will not show copper. Defendants' Exhibit No. 5 is of the same character as Complainant's Exhibit No. 18. It does not differ from the ordinary granite of the Butte district; that is a piece of Butte granite taken from near the surface where it has been stained by weathering. The brownish color in Defendants' Exhibit No. 5 is rotted granite, stained chiefly by iron. There is a little reddish brown coat upon some of the pieces, which may be either hemachite, or hemachite mixed with cuprite. Cuprite is red oxide of copper. The red oxide of copper is derived just as the iron, from the rotting of the rocks and the assembling of the copper and iron upon joint fractures, and coating the surface of fragments of the rock, either in the wash or below it.

The next opening I examined was shaft No. 2. This shaft is about fourteen feet deep. It is also in granite, somewhat rotted, and discolored by weathering. It enters the solid rock for a distance of about 7 or 8 feet and shows a little aplite. There is no [193] vein, nor any vein mineralization in shaft No. 2. There is no vein quartz there; I did not take a sample. Defendants' Exhibit No. 6 is a piece of aplite rather coarser than ordinary. It contains

(Testimony of Horace V. Winchell.)

some visible feldspar. It is not vein quartz. It is granular. Vein quartz consists of quartz crystallized in inter-penetrating and interlocking crystals. These crystals are granular, like tapioca in a bag, or like granulated sugar, lying against each other and not interlocking by their crystallization. The structure of the rock is not vein quartz, but that of eruptive rock, and that of this particular kind of eruptive rock, aplite. Defendants' Exhibit 31 is a piece of iron-stained aplite. Along one very minute crack, in which there has been a little secondary quartz deposited, probably by surface waters. It is not vein material, nor does it carry any vein mineralization. I also examined shaft No. 3 on Complainant's Exhibit 14. This shaft is 40 feet deep. It is a two compartment shaft, lined nearly to the bottom, contains some little caving of the ground in the set above the bottom of the cross-cut, north at the depth of 25 feet. In this cut there is a small vein dipping south 78 degrees. It is first seen in the cross-cut at the distance of four or five feet north of the shaft, and if it continues upward to the surface with a south dip of 78 degrees, would not appear at any point within the shaft. There is another small veinlet, perhaps two inches in thickness, about five or six feet north of the first one. They are both very minor fractures. The northern one has a nearly vertical dip. They would, therefore, probably between the depths of twenty-five and the surface be closer together than they are at the depth of twenty-five feet, and might possibly come together in one master joint, or small veinlet. These

(Testimony of Horace V. Winchell.)

are both in rotted granite, and in the face of the cross-cut, the north face, there is granite and aplite. There is also at the bottom of the shaft a fault slip, standing vertical and striking north seventeen degrees east. In the shaft itself there is no vein nor any mineralization visible. This fault slip is not a very important one. It is not exactly with the continental fault, but the various planes of movement were not always parallel, and might easily be a part of that [194] continental fault. I did not take a sample here. I next examined the Rabbit discovery. I saw there some decayed granite. Upon the west side, at the bottom, there is a short cross-cut which barely enters beneath the wash into solid rock, which discloses decayed granite and an inch to two inches of an irregular little copper stain, which does not cross the shaft, but shows entirely upon the west side. It has no continuity, nor is it a vein. It has simply washed into this little crevice, perhaps from the overlying debris. I found similar material there to Defendants' Exhibit 32 on the west side of the shaft. That is copper stained aplite, and the aplite structure and material plainly shows on it. The deposit was about an inch in the bottom. I suppose it would not go down thirty feet, but there is nothing to show. When I say I suppose it would not go down thirty feet, I base my statement upon the character of the aplite material, which is already showing, merely coated or stained by the copper silicate. I next examined the tunnel near the Olivia discovery shaft, No. 31. It is shown upon Complainant's Exhibit 17.

(Testimony of Horace V. Winchell.)

This tunnel is extended in a northeasterly direction and passes out of the wash at a distance of about eight feet from the mouth of the open cut. It is extended for about 100 feet in a northeasterly direction beyond the line of the bedrock, that is, entirely in the solid formation. There are two cross-cuts, one easterly and the other northwesterly at the depth of about ten or fifteen feet below the wash. The northwesterly cross-cut encounters a small vein at the distance of about twenty feet from the tunnel itself. This vein in all probability is chiefly aplite, but there may have been a little movement along it, and there may have been some vein mineralization in connection with it. I am not entirely certain that it is the real vein. There has been, however, some copper mineralization which may be in part derived from ascending waters, but which is chiefly of the same character as the mineralization which impregnates the country rock throughout that entire country, and which is simply more abundant here because of the presence of the little aplite dyke and the fact that there is a plane [195] of ready circulation of waters. Just north of the first little veinlet, about nine feet, is a second one, and on the north side of this is granite. The strike of these two veinlets is north eighty degrees east, and they are dipping parallel eighty degrees to the north. I took samples for the purpose of illustrating the progressive discoloration of the aplite at this point and the way in which the cuprite sometimes takes the place of the chrysocolla.

(Testimony of Horace V. Winchell.)

(Sample marked for identification Complainant's Exhibit 19.)

This sample is a little more than one inch in thickness, is a sample of the highest grade material at this point, and shows the most intense copper impregnation. This small sample was taken from the back of the cross-cut, and shows, as I said, the most intense mineralization. The rapidity with which the mineralization and the richness decrease with depth is illustrated by this sample (which was marked by the Examiner for identification, Complainant's Exhibit 20), taken from the floor of this same cross-cut in which the aplite plainly appears discolored and in which there is also a little cuprite but where a portion of the aplite is almost entirely free from copper staining and shows the white rock emerging from its taint of copper silicate. Just to complete the series, I have got a piece of fresh aplite, uncolored, taken from the cross-cut shown upon Complainant's Exhibit 15, near the mouth of the Hornet tunnel, and colored green upon this exhibit. This is a sample of aplite which has not been at all discolored by copper stain, and simply shows the rock before any surface waters carried cuprite into it.

(Sample handed to Examiner and marked for identification Complainant's Exhibit 21.)

This was not from this precise cross-cut.

(Samples marked Complainant's Exhibits 19, 20 and 21 offered and received in evidence.)

Returning to tunnel called No. 31, I examined cross-cut running to the east. This cross-cut passes

(Testimony of Horace V. Winchell.)

through discolored and decayed granite, and contains innumerable, I counted fifty and then stopped, little ribs of granite, harder, more iron stained, a little more silicious, like the rib from the bottom of shaft No. 1, and [196] represented by Complainant's Exhibit No. 18. There is no discoloration by copper, and no aplite of any noticeable quantity in that cross-cut. At a distance of about 40 feet beyond these cross-cuts, a small discontinuous veinlet, associated here also with aplite, is seen upon the north side of the tunnel. It has the regular strike, north twenty east, and the north dip. It appears to have been terminated in its eastern course by a small fault which occurs at a distance of about fifty feet from the two cross-cuts mentioned. This fault, which is vertical, strikes north twenty degrees west. The fault contains from four to six inches of clay, and the clay is discolored by copper staining presumably chrysocolla. East of this point the tunnel No. 31 is entirely in granite, and the granite is considerably copper stained. There is no sign of a vein. There is a little fault running easterly and westerly, near the eastern end, and along that fault, where it passes out of the north side, there is a small amount of discoloration by copper, but there is no vein in that part of the tunnel.

The red marks on Complainant's Exhibit No. 7 are intended to represent small veinlets or fissures in which there is some copper and mineralization, as distinguished from the pencil marks which represent

(Testimony of Horace V. Winchell.)

evident lines of faulting, along which there has been some movement.

The vein going easterly, which shows to the west of the fault, terminates against the fault, and its further extension is undeveloped.

I next examined a shaft and the workings upon it, shown upon Complainant's Exhibit 14, just east of the eastern property line of the Butte and Boston placer. It is marked on the ground as the Vesuvius shaft. This shaft, which is something more than forty feet deep, passes into the country rock and contains north and south cross-cuts aggregating nearly 100 feet in length. The figure given was ascertained by me by pacing. Upon the map I find it is scaled about 120 feet in length. The disclosures in this shaft are of particular interest. The country rock is stained and impregnated with copper at this depth of 40 feet from the surface, the granite [197] still retaining its structure and its position, and with the ferro-magnesian minerals unremoved, with no pyritization, no sulphide mineralization, such as is found in the vicinity of the large veins, copper stained country rock stained by surface washing. The sample of this I have for exhibit (marked by Examiner for Identification Complainant's Exhibit 22). This development work is of importance, not alone because it discloses the staining and mineralization by surface waters of the country rock, and is typical of the country rock over several hundred acres in that vicinity, but also because the cross-cut is directly in the assumed line strike of the north vein

(Testimony of Horace V. Winchell.)

to which I have heard reference in this testimony, and fails to disclose any evidence of a vein whatever. I should like to remark in this connection, that this green color very rapidly fades and the rock which appears quite green at the present time, in a week or two, because of drying, will probably be much less discolored. I have a couple of samples to illustrate that, one a sample taken out of the ground yesterday, and one taken a week ago.

(Complainant's Exhibit No. 22 offered and received in evidence.)

(Sample handed to Examiner and marked for Identification Complainant's Exhibit No. 23.)

Complainant's Exhibit 23 consists of two specimens, both of them about the same grade of chrysocolla, one of them removed from the ground about the 22d of December and the other about the first of January, one of them very deep blue in color and the other already faded to a grayish green. They were of the same color when I took them out.

(Complainant's Exhibit 23 offered and received in evidence.)

I next visited the Hornet tunnel and the Hornet shaft and the workings connected therewith. I had previously visited the Mullins shaft and the workings connected with that, and that passes through the Hornet tunnel. These workings are shown upon a large scale upon Complainant's Exhibit No. 15. The Hornet tunnel passes into the bedrock at a distance of about eighty feet from its portal. It here encounters what I have been accustomed to call the

(Testimony of Horace V. Winchell.)

Mullins vein. I believe it has been referred to as the south vein in this hearing. [198] And it follows this vein to its eastern face, a distance of 120 feet. The vein has a rather flat dip to the south. It varies in width from a few inches to three feet. It has a very well marked hanging-wall, and an equally good footwall. It dips to the south at an angle of about sixty degrees. The Mullins shaft, to which I referred as having been sunk several years ago and examined by me at the time, followed this vein upon its dip. I think the upper part of the shaft passing through the wash was vertical, and then it followed the dip of the vein some two hundred feet, at which point there was a drift extended to the east. The vein still retained its flat dip to the south, and contained a foot or eighteen inches of copper ore. The mineralization in this vein is *what commonly* found in the veins of this camp. It contains quartz and the copper minerals. Near the bottom, or east from the bottom of the shaft, I recall the ground had caved in from the hanging, making what is practically a cross-cut into the hanging, and the country rock there disclosed was a very excellent article of granite, very little discolored or stained by copper. There are two or three small fault slips across the vein in the Hornet tunnel. One of these, apparently the most persistent and important, is followed in a cross-cut extended from the Hornet tunnel to the south, toward the Hornet discovery. This fault strikes north ten degrees east, and dips east seventy degrees. It contains the usual fault filling and some

(Testimony of Horace V. Winchell.)

clay and the clay has been impregnated with chrysocolla. The country rock south from the vein in this cross-cut is granite and the granite itself is somewhat copper stained. There are also two or three little seams containing small kidneys and streaks of high-grade material, cuprite and chrysocolla. One of these seams I noted particularly, between the Hornet discovery and the Gulf discovery, upon the eastern side, which had been very carefully excavated and picked out. The Hornet discovery shaft has been sunk to the depth of thirty-seven and one-half feet through wash or surface debris to the depth of twenty-four feet, and below that point in granite. At the bottom of this shaft, the Hornet discovery, there is a little cross-cut to the southwest, all in copper stained granite. There is also a cross-cut to the [199] northeast, which reaches the Mullins vein at a distance of about 18 feet from the Hornet discovery shaft. Between the shaft and the vein the cross-cut is entirely in copper stained granite, with a little cuprite in the joints. There is no vein disclosed in the workings of the Hornet discovery shaft, either upon the level at the Hornet tunnel nor the level at the bottom of the shaft. The level at the bottom of the shaft is exhibited with its geology on Complainant's Exhibit 16. There has been a small raise extended from the lower level upward upon the vein to connect with the Hornet tunnel. The vertical distance is probably about twelve feet. The Mullins vein that is shown in the lower level has a width of from twelve inches to two feet, and has the usual

(Testimony of Horace V. Winchell.)

characteristics. The same small fault to which I referred as striking north ten degrees east, and dipping east seventy degrees, is seen in the lower level. It has here a slightly deeper dip to the east. The dip of the vein is the same south sixty degrees.

Referring to Complainant's Exhibit 16, the colored portion represents the Mullins vein. At the east end of the drift, there is a small stope. Both walls are there very plainly, very smooth, well-defined walls. They are discolored; the country rock to that depth is all discolored; there is a discoloration of the country rock at that depth. There has been no enlargement of the vein. The country rock would be just as much discolored if there were no vein there, and it would not mean a vein. The fault is represented on Complainant's Exhibit 16 by blue lines; there are several faults. The fault is plainly visible as you follow along the cross-cut in the vein, as you turn the corner. The material in the fault contains different filling from the material outside of it; it contains fault filling, crushed material, clay, and in this case the clay is copper stained. The fault is from four to six inches wide on that level. I examined the lower workings of the Mullins shaft some years ago; the vein is disclosed there at about the same width.

Referring to the Hornet shaft, if a sample were taken about seventeen feet below the surface, it would come from the wash or debris above the solid rock, and there could be samples obtained from the wash

(Testimony of Horace V. Winchell.)

of copper stained material in sufficient quantities to [200] furnish an assay almost as well from some of this wash as from the surface or upper portion of the solid rock. If there were an east and west vein at the Hornet discovery, its course would carry it through that cross-cut. I examined this cross-cut marked in green upon Complainant's Exhibit 15, which is at a slightly lower elevation than the Hornet tunnel, and which is entered through a hole marked "Wash," or near the place marked "Wash" upon Complainant's Exhibit 13. This half-moon shaped cross-cut is entirely in the country rock, granite, except for that portion which is not quite below the wash. The only rock disclosed is granite and aplite, and there is no vein in it whatever.

If there were an east and west vein, it would be shown in those workings on the Pacific to the east. I have not detailed specific examinations upon the Bullwhacker and Altoona and other properties in this vicinity, but I have made these examinations, and the same general staining of the country rock, the same segregation of copper values in little joint intersections, and in small kidneys through the country rock, has led to those developments which have only resulted in the failure to discover ore at depth.

The vein which I described in the tunnel near the Olivia discovery on Complainant's Exhibit 17, is not disclosed or shown in any other workings either easterly or westerly.

Q. You may state whether the definition of a vein given yesterday by Mr. Watson is a correct definition

(Testimony of Horace V. Winchell.)
of a vein as you understand it.

Mr. NOLAN.—Object to that as incompetent. He can, himself, in his own judgment define what is a vein. It is for the Court to say which is the correct definition. He is not competent to pass upon the credibility of another witness, or upon the correctness of his testimony.

The WITNESS.—The definition of a vein given yesterday was as follows: A tabular, metalliferous mass, differing materially from the enclosing rock. That definition is more strictly applicable to a dyke than to a vein. A dyke is a tabular, metalliferous mass, differing from the enclosing rock, but it has been formed by igneous intrusions and does not contain ore. The definition of a vein from a [201] miner's standpoint contains at least three attributes, without which it is not a vein. As concisely as I can put it, I should define a vein in this way; a tabular deposit of mineral, or mineral-bearing rock in place, within definite boundaries, containing such indications of value as to justify the miner in following it in the pursuit of ore. Now, a dyke is a tabular deposit in place within boundaries, but it does not contain any indications of value. A placer contains indications of value, but it is not in place, nor within definite boundaries. In other words, those various attributes must all be present to make a vein.

Cross-examination.

(By Mr. NOLAN.)

I graduated from the University of Michigan in 1889; after graduation for three years I was assistant

(Testimony of Horace V. Winchell.)

State Geologist of Minnesota; and after that time I became identified with iron mine operations in Minnesota. In 1898 I became identified with the mines in Butte, professionally. I was here until 1906. Before 1898 I went to Alaska, and since 1898 I went to Sweden and also to Alaska. I now have a connection with the Amalgamated Copper Company as consulting geologist.

In the case of iron ores, in the exploration that I carried on, I gained very little knowledge in reference to copper fissure veins. When I was in an iron mine I was not in a copper mine. During that time I acquired information and experience in connection with ore deposits in general, but not copper ores particularly. There is this kinship or connection between copper ore deposits and iron ore deposits: Wherever a large deposit of sulphide ores containing copper and iron has been very extensively mineralized, there is usually what is called an iron hat or gossan, which may be an important producer of iron ores, above the copper ore below. The gossan occurs on the copper deposits and not on the iron, because the iron is all iron and does usually go down into sulphide ores in the Lake Superior region.

The granite is a result of a cooling of molten material from the interior of the earth. It cooled at great depth and has been brought to the surface by the erosion, or removal of the overlying rocks. [202] It is undoubtedly true that before it crystallized into granite it was in a molten state. At the time that it was in this molten condition, the superincumbent

(Testimony of Horace V. Winchell.)

material was any other kind of rock, limestone, quartzite, dyrite, slate, any kind you please. Some of them were in a molten condition, and some were not.

Q. And some of them solidified in the place they occupied when they were in a molten state?

A. The one I mentioned, diarite, did, but if you say andesite, or dacite, then probably it came to the surface and cooled. Some kinds of rocks are deep-seated, eruptives, which cooled at depth. Others are called extrusive eruptives, which cooled on the surface or near it. But as I understand it, this granite, first in a molten condition and then gradually cooling, became congealed, remained in relatively the same position that it did, that it was in the time that it was in its molten condition. It is a deep-seated eruptive and cooled at depth, but it may have moved around a great deal at depth. It became solid as it is to-day before there were any fractures or fissures in it. These fractures were caused by unequal tension in the earth's crust. I will explain. It is a fact of common knowledge that heated bodies have a greater diameter than cold bodies. Cooling produces contraction. Now, the earth has been for a long time cooling and in that process its diameter has been shrinking, but the crust of the earth cooled more rapidly than its interior. When this crust became cooled to the point of solidity and the interior began to shrink still further, there was a tendency for the crust to become loose and the weight of that crust tending to constantly keep it from arching, produced

(Testimony of Horace V. Winchell.)

wrinkles in the crust, just like the wrinkles in the skin of a dried-up apple. Those wrinkles are the mountain wrinkles upon the earth, and in the process of wrinkling fissures are formed, because of the unequal stresses, and because of the fact that the rocks became strained beyond their strength. One other cause of wrinkles is the fact that sediments are being constantly carried into the ocean and loading up the bed of the sea, and when equilibrium is destroyed, the weight of the ocean bed overcomes the weight of the rocks upon the land, there is [203] a sudden subsidence in the ocean's bottom, and corresponding uplift on the land and an earthquake is produced. In such a way fractures are formed in the solid crust of the earth. The fractures that we encounter in Butte are formed in the same way, but the mineralization had nothing to do with the formation of the fractures. The fissure became mineralized with copper in this way; it was brought into the fissure, which may not have been an open fissure, by solutions, warm waters from the adjacent and subterranean rocks and it was there deposited, replacing the rock material that was already in and adjacent to the fissure.

I was employed to make investigations in this case about two weeks ago. That was the first connection I had with the case. I had examined the ground repeatedly in the course of my eight years' residence in Butte, and I have made innumerable examinations and trips to various portions of the camp during the five or six years since I moved away from here. I did not always take extensive notes in those exam-

(Testimony of Horace V. Winchell.)

inations. I did not consult my notes made in connection with those examinations with the testimony I am giving to-day. I haven't them here. I supposed I had, but I find that haven't them, but I have a very clear recollection. I examined whatever openings there were there within the last eight or nine years.

Q. And do you recall to mind now any openings that you examined existing on the ground to-day, eight or nine years ago?

The WITNESS.—Well, not immediately within the limits of this property, but on all three sides of it, north, east and south. I have examined other openings which I recall to mind. The Bullwhacker, the Birtha and the Vesuvius. I did not examine the Vesuvius before; that seems to be new work; I examined that day before yesterday, the first time I have ever been in that shaft. The extent of my examination before the Christmas holidays was about half a day, and upon my return recently I made a further examination. I say this discoloration of the ground over there covers several hundred acres.

I did not notice a great many continuous fractures in the Hornet discovery. There is one rather persistent fracture and a [204] less important one, and then the usual little spaces between, decayed rock near the surface and nothing that you would call numerous fissures, but there a great many channels for water circulation. I found a greater mineralization there than in the cross-cut from tunnel No. 31 running to the south. I counted, perhaps, fifty small joints and ribs of granite there, but there is

(Testimony of Horace V. Winchell.)

very little copper discoloration in the cross-cut east from tunnel 31, and there is considerable copper discoloration in the cross-cut between the Hornet shaft and the Hornet discovery, but even there it is more pronounced along this north and south fault plane than elsewhere, and I suppose one reason for that would be that this fault plane has been there for a greater length of time and marks a more pronounced fracture than the smaller fractures that I spoke of.

The piece of rock you call my attention to is very highly mineralized; it is good, high-grade copper ore. In the explorations that I made there I did not find any pieces as large as that, but I saw the same minerals and have described them at many points in little horizontal and vertical joint plans and intersections of small crevices and fissures in the rock.

I think it was the 22d of December, or thereabouts, in 1911, that I made an examination of shaft No. 1. I did not find any aplite there; I did not find any lead there. I made an examination on the north side of the shaft; I found decomposed granite there. It is about twenty-four feet from the actual surface of the ground to the top of the bedrock in the Hornet shaft. I noticed the character of the material on the dump of No. 1 shaft. I think most of it is similar to the material in the shaft. There was some snow on the ground, you could not see all of the dump. I did not pick into the dump very far.

I went from shaft No. 1 to shaft No. 2. I noticed no copper mineralization in shaft No. 1. If I sunk a shaft and encountered the material that is encoun-

(Testimony of Horace V. Winchell.)

tered in the cross-cut in the Mullins tunnel, or the cross-cut extending from the Mullins tunnel to the discovery shaft, with sometimes a cuprite visible in the material, [205] highly mineralized, and sometimes chrysocolla, and without knowing anything about the Mullins tunnel—if I found it in the wash I would know that it was in the wash and certainly would not attempt to make a quartz location on that; and if I sunk into that discolored granite and found here and there a little nest of superficial material like that, I would come to the conclusion which I have already reached now, that it was purely superficial; that it was simply country rock. The piece of rock you now show me is copper-stained granite; it is not part of a vein in any respect. I would say it is not a part of that vein in the face of the tunnel which I have stated was a foot or six inches wide. It is part of the country rock which is adjacent to the vein. It is not vein material, and it never was and never will be. It is simply copper stained like all the rest of the country rock around there, or like most of it. It has got the granite minerals still perfectly visible in it. It is not material that you would encounter in a lead. I would call it copper ore; yes, sir, copper ore, but I would not say it came from a lead. There are hundreds of acres of ground right in this vicinity where little eggs of ore like that have been formed and which do not go down any distance whatever into the ground.

Q. Well, supposing as a matter of fact, in this ground you found a mineralization for fifteen or

(Testimony of Horace V. Winchell.)

twenty feet that will go four or five per cent copper—that likewise in your judgment would not be a lead—could not be located as a lead. Is that true?

A. No, I did not say that.

Q. Unless there were boundaries.

A. You can't have boundaries if that comes over there for a mile north and south and a mile west and east, and only fifty feet deep, or twenty feet deep. I have my doubts about its being located as a lead. I do not believe it can be done under the laws of the United States.

The WITNESS.—Referring further to that sample I would say at any rate that it is richly mineralized, but it does not have anything [206] more to do with a vein than if you took some copper out of one of these precipitation tanks and got an assay on that. The enriching agents have been Father Time and the atmosphere, leaching the granite down and changing the minute quantities of copper into copper silicates and leaving them right there where the granite presents its surface, that is all. If a prospector encountered this piece, and as he goes through adjacent territory and finds material like that interspersed, it would be necessary for him to satisfy himself by further digging whether there was a structural feature in the ground. It is not necessary that a lead have any particular depth in order to be locatable as a lead, but it must have indications of value that would justify the miner in following it in the pursuit of ore. You do not find ore in the upper cross-cut from the Mullins tunnel to the Hor-

(Testimony of Horace V. Winchell.)

net discovery; you have a few little bits of kidneys, and in those kidneys you have this cuprite and chrysocolla formed at the intersection of joints or water channels, and no other place. There is a stratification in the wash. There is a north and south fault. Aside from the Mullins vein, and the north and south portion of the continental fault, there are no continuous structural breaks or features which attracted my attention. The Mullins vein has well-defined walls, but that does not show in the cross-cut. I saw the walls; they are discernible there in the Mullins shaft, and in the drift on the Hornet tunnel level, and in the lower level. The width of the lead as it exists at the Mullins shaft would be eighteen inches to three or four feet. The width of the lead as disclosed by the walls at the shaft itself I suppose would be a maximum of four feet in thickness. I think in the level below there is one place where it is nearly that wide.

In shaft No. 2 I encountered granite, rotten to some extent, and discolored by washing, iron discoloration chiefly. There is a little aplite in that shaft also. I did not obtain any samples. There is no appearance of a vein there, and nothing in the formation to indicate the existence of a vein. Referring to Defendants' Exhibit No. 6, I will say that is aplite, coarser than usual; the other portion of this exhibit which you show me is aplite stained with iron. [207] I think I mentioned the fact that there was a rather unusually coarse feldspar crystal visible and that the crystallization is coarser in that piece than

(Testimony of Horace V. Winchell.)

is usual in aplite. In the case of vein quartz, the crystals interlock; they interpenetrate each other. They are not granular, lying side by side, but at various angles in the vein. Defendants' Exhibit 31 consists of three pieces of aplite, not so coarse grained as Defendants' Exhibit 6, but containing a little secondary quartz along fractures. Aplite is quartz, containing more or less feldspar and sometimes a little mica, also its poverty in mica distinguishes it from granite, but quartz is one of the constituents of granite and makes up the greater part of aplite, but it is a different kind of quartz from that deposited in veins, associated with the ore. Chemically, the quartz in the aplite is the same as quartz in granite, and is composed of pure silicate, but structurally it has different associations and different shapes. The affinity of the mineral in solutions is not for the quartz. It is for the other minerals of the granite. The quartz is not replaced. It remains or is recrystallized, and crystallized with it is a silica of the silicates, and the other minerals of the granite, but the copper and the sulphur and the iron and the arsenic replace the lime and the potash and the soda and the alumina and the magnesia; the quartz remains, or is crystallized usually.

The third place I entered was shaft No. 3 on our map; the two compartment shaft. There is a cross-cut from that shaft, about twelve feet long, at a depth of twenty-five feet, a cross-cut to the north, disclosing two small veinlets; they can hardly be distinguished by the name of a vein. We are in a camp of veins,

(Testimony of Horace V. Winchell.)

and it takes more than a vein to make a mine. It is true that these veinlets sometimes change their form and in depth are expanded laterally, and I would then call them veins. I have attempted to tell you what I saw there, and if you prove to me that the Anaconda vein is the extension of the veinlet, then I am perfectly willing to call it a vein, but until you show me some place where it has the dimensions and the importance sufficient to justify that appellation, I continue to call it a veinlet. It had walls; it had gangue; and the only difference [208] between it and a vein is simply the size, all the other elements existed. Those two veinlets run parallel. I did not say genetically they were not the same as a vein; I merely endeavored by the name to characterize their importance. The strike is the same as a vein; and a dip to the south, the same as a vein. I do not know whether it would go down a distance of twenty feet, or whether it would stop beyond the point where I could see. As those two veinlets presented themselves to me, they were about three feet long in the cross-cut to which we are referring. That was as far as I could see on the line of strike on those veinlets. They are just exactly what I would look for in locating a mine. They are really fissures. They have the usual vein filling, whereas this general dissemination, superficial discoloration is nothing of that character. The first one of those veinlets is observable in the cross-cut a distance of four or five feet north of the shaft, and the second one about five feet beyond. The country rock there is granite.

(Testimony of Horace V. Winchell.)

There is a little aplite. It is considerably rotted, and where the granite is very much rotted, sometimes this discoloration has been rather carried away, and it is not quite as green as where the granite has been subjected to a little less of this surface water action. Undoubterly all the aplite exists there as intrusion. This double compartment shaft was not in such a condition that I could make an examination of the sides of the shaft; it was planked all the way around. The shaft is about forty feet deep. I do not know how deep the bedrock is; you cannot see the bedrock and the wash; it is planked up. In the bottom you encounter bedrock. I said if those two veinlets maintained their dip, they could not go into the shaft between the cross-cut and the surface. The veinlets are on the north side of the shaft running entirely past them; they do not strike towards the shaft. I took no sample of this shaft No. 9.

Referring to Defendants' Exhibit 33, that is so much rotted and covered with mud and discoloration, that it is difficult to characterize it in small fragments. This piece of it is a product of rock decomposition, it is stained somewhat. It is mineralized at least [209] to the extent of the stain. If you pick down some of that stuff in the cross-cut in shaft No. 9, or 3, and break it up, there might be some resembling this. I did not say there is no ore material in it; it contains a little copper.

Referring to Defendants' Exhibit No. 7, these are both clearly copper stained aplite. My recollection is that those two veinlets are about five or six feet

(Testimony of Horace V. Winchell.)

apart, possibly a little less. They dip in the opposite direction, therefore they would not unite unless one or the other changed its dip. One of them has nearly a vertical dip; and the southerly one dipped to the south seventy-eight degrees.

I said I observed a fault there. A fault is a fracture in the earth's crust along which there has been movements of one side relative to the other. We have both pre-mineral and post-mineral faults. Some of them occur before the mineral is deposited; others occur afterwards. There is nothing in the appearance of any fault itself to tell what its age is. It is always in its relation to something else that we determine its age,—only comparatively, relatively. You could not say there is a fault of the Tertiary period and another one of the Quaternary period. You say it is a fault because we observe the characteristics of a plane movement, and its age is only relative to the surrounding materials. I do not know what effect the existence of this fault had upon those veinlets. The fault was seen on the west side of the shaft and the northwest corner in the cave below the cross-cut in which the veinlets are seen. The material in the fault fissure was slightly discolored, a little green discoloration. The fault was narrow, perhaps an inch or less. If this fault had vein materials in it, and had a vein filling, it might be a vein, and the miners in that section of the country have prospected these faults somewhat and taken some of the chrysocolla out of them. The fault constitutes an easy channel for water circula-

(Testimony of Horace V. Winchell.)

tion running down over the surface, and since the slope of the hill is to the west, any fault obstructing the course of the slope and running north and south, would act as a little gutter or dip into which these waters would drain, and would impregnate them with this copper silicate which would go a [210] little deeper in the fault than in the unfaulted country rock. A fault constitutes an interruption of the continuity of the fissure.

Yes, sir, I went into the Rabbit discovery. The shaft is just through the wash, and a small cross-cut to the wash shows altered granite. The cross-cut enters the bedrock. The cross-cut is very short; I do not recall any very marked stain there. There are one or two little irregular joints continuing the green copper stain, to be seen on the west side, which do not cross the shaft. They do not extend so far east as the shaft excavation.

Defendants' Exhibit 32 is copper stained aplite. The aplite shows distinct, clearly it is evidently very near the bottom of a wash, not very far underground. There was no evidence of a lead, or any evidence of a wall of a lead. The piece of rock you now hand me contains some aplite, a little chrysocolla and some cuprite; there may be a little clay also. If you take a piece of that kind of material and select it from its natural environment in the ground, it will unquestionably suggest lead matter, but when you come to find how it occurs and where and why, you are perfectly convinced that it is not. I have already a little, one inch, possibly two inches

(Testimony of Horace V. Winchell.)

in places, irregular seams of no continuity, containing that class of material, at the bottom of the Rabbit discovery. It had very sharp boundaries in all directions.

(The sample referred to was marked for identification Defendants' Exhibit No. 54.)

This mineral which might contain material like sample 54 has a length of less than the width of the shaft. Westerly it ran into the cut and disappeared. Towards the east it had an extremity. It had no course; it was irregular. The boundaries, of course, conformed themselves to its irregularity in the movement of these seams. I would say that this sample 54 is mineralized just the same as all the other little nests and kidneys around that country within fifty feet of the surface in that district.

Referring to the tunnel shown on our map, Complainant's Exhibit 17, I spoke of it as containing a vein with considerable hesitation. I told you that I was not sure that there was more than real vein in this ground. It is mostly aplite, and really there is some mineralization [211] along it, and apparently there has been a little movement along it, which makes it look as though there might possibly be some real vein mineralization, but I view it with considerable doubt and scepticism. I am inclined to believe that a cross-cut at a depth of fifty feet might fail to find any trace of it, that is fifty feet deeper. It has boundaries, sometimes, but not always, they would be walls in my judgment. In this cross-cut where we have the red marking, after you

(Testimony of Horace V. Winchell.)

enter the tunnel I could determine both boundaries. They are of the nature of walls. They are on two sides of the little aplite dykes there, and the aplite continues eastward, presumably until this small veinlet or vein enters the main tunnel on the north side, about thirty feet east of the cross-cut, and there the aplite suddenly stops and there is only a discoloration between that point and the fault. Referring to the vein itself as it appears in this course, you can see both walls, and the southern streak, but there is a little intervening horse of granite, and then another little impregnation, or veinlet, and then more granite, and then another little impregnation or veinlet in aplite. Consequently, it is a matter that requires further development to say whether all three of these belong to one vein, or whether they are independent little platings in the rock following minute or small aplite dykes. I observed this vein on its strike as it exists in the cross-cut there the width of the cross-cut; four or five feet at most. These three veinlets would extend across the material, from the northern one to the southern one, perhaps twelve feet. Between the veinlets would be granite. The southern veinlet is the largest, it is perhaps about a foot, two feet in thickness; the other two are smaller, four inches or thereabouts. In those veinlets the gangue is mostly aplite. That is one reason why I was rather uncertain as to its being a genuine vein. You see when an aplite dyke cuts through granite, if the granite is fractured by a break parallel with the dyke, the plane of contact between the

(Testimony of Horace V. Winchell.)

aplite and the granite constitutes a plane of weakness and there might have been a little movement along there in the nature of a fault, which would permit an unusual amount of this copper staining [212] to enter and mineralize that dyke for a short distance below the surface and really not have any vein there at all. I am not unwilling to call it a vein; I do not feel like being captious on that point at all. This dotted red line above there simply tends to represent that the vein may or may not be there; it is simply suggestive that probably it extends through there. Its existence over here, further to the east, would suggest that it goes through there, otherwise it would not have been so indicated on that map. I do not believe any man-made rules would ever limit a vein. Veins are made by natural forces and processes and man would have a hard time limiting the courses of a vein. When I am examining mines and reporting upon the valuation of the property, I never assume that the vein goes very far beyond the point where I actually see it. In locating a mine, if I have ten feet in mineral along a vein, it is sufficient to make a location. I would not make any assumption as to its extent, there might be a fault in the next two feet. If a prospector making a location has any guiding principle, I have never been able to discover it. Personally, I would simply figure that I had the lead as it was visible, with the possibility of faults if it extended beyond where it was visible to me. The law simply contemplates a discovery.

(Testimony of Horace V. Winchell.)

You are not likely to find this cuprite which has been offered in evidence here so often, where you find the sulphite ore. You find the oxidized products sometimes above the sulphide, and sometimes the oxidized products contain almost no copper. That is the case in the upper levels of the large veins of the Butte camp. Chrysocolla, cuprite, azurite and malachite are present in very limited quantities in the upper levels of the zone of oxidation. The sulphide ores which come in below that zone are not chalcopyrites, as you mentioned, but chalcocite, which is copper glance, bornite, covellite and enargite. In the territory east of Silver Bow Creek, particularly in the vicinity of the Butte and Boston placer, sulphide ores have not been discovered in any quantity, and nobody knows whether there is a large body of sulphide in the Mullins vein below the stopping or not. There is certainly not the disseminated copper mineralization [213] through the granite adjacent to the veins, which is so abundant in the vicinity of the Butte copper mines, that is, in the district I am speaking of, the Butte and Boston placer. If any shipments of ore have occurred by reason of operation of mines within a radius of half a mile of this Butte and Boston placer, it would not necessarily be oxidized ores. The Homestake mine and the Clinton Tunnel on the north and northeast produce sulphide ores. The Montgomery and some of the properties south produce sulphide ores, and they were not from typical copper veins, and they are not of the same character or mineralization as

(Testimony of Horace V. Winchell.)

they would seem upon the Butte and Boston placer and the BIRTHA and the immediate vicinity,—the Pacific. I have not suggested that in order to be a vein, to conform to my requirements, it must possess the characteristics of the veins that we encounter on the Butte hill. There is not a single mine, east or south of the Butte and Boston placer ground in operation at the present time; a mine is something which is in operation; an ore deposit may not be operated, a vein may exist for centuries without being operated, but a mine is something that is being operated. I have already referred to sulphide ores extracted from the veins on the northeast and on the south of this property. The Homestake and the Clinton tunnel on the northeast, about a mile. If you go still farther to the east and southeast, up over the summit of the range, sulphide ores are also found. There were also sulphide ores extracted from the claims operated by the Corys on the summit to the east; I suppose it would be a mile and a half. To the south or southeast of this placer properties have been operated where sulphide ores were extracted. Half a mile or more to the south some small seams of sulphide ore have been discovered, and they are all of a different character from any of the mineralization disclosed at the present time in any of the workings on the Butte and Boston placer or its vicinity. I have in mind the Montgomery. I have also been in three properties south of Park Canyon, in which there is some such small veins of sulphide ore. I have no doubt that wherever a sufficient quantity of

(Testimony of Horace V. Winchell.)

these sulphide ores have been found in these different properties [214] they were shipped and treated commercially. In my judgment, in order to have a mine it is not necessary that the expenditure shall be less than the receipts from the beginning. A mine is an opening in the earth from which ores are extracted. It is not necessary to have it extracted profitably, but it must be extracted and it must be in operation in order to be a mine. When a mine is in operation it is a mine; it is alive, and when it is not in operation, it is a corpse; when a man is alive, he is a man; when he is dead, he is a corpse.

Q. And although there may be ore, and ore to the extent so that it is commercial, and operations cease, now what do you call that ground in that condition, containing the ore, no operations carried on at all, it remains quiescent?

A. I call it a hole in the ground, with some ore in it, in sight; and then when you operate it, it is a mine, yes, sir. If the mining operations are suspended temporarily, and the mine is still equipped and ready for operation, it can still be called a mine. If the pumps are pulled, and the mine is allowed to fill with water, and the ground caves and the whole thing is abandoned, it is no longer a mine.

Q. Take it in the case of those properties—we won't say mines—from which the sulphide ores were extracted, to the north and to the east and to the south of the placer ground in question, do you know the course of the leads, containing the sulphide ores?

A. Yes, sir, I know in general. The course was

(Testimony of Horace V. Winchell.)

sometimes north of east, sometimes nearly east, sometimes south of east. Generally an easterly and westerly strike.

The WITNESS.—In the properties in question, in some cases there was a disappearance of the sulphide ores. For instance, in the Homestake mine; I have personal knowledge of that fact. Now disappearance may be in two directions, either downward along the dip, or along the strike. And in reference to the Homestake, I do not care to be misunderstood. There may still be small kidneys or small sheets of ore in the Homestake vein; that is on the dip. They were so very limited on the strike that they disappeared, and [215] after opening up level after level and finding they did not get anything but what was tending to disappear, mining operations were stopped and I was on the ground a week before the pumps were pulled.

I do not recall any case in the other properties I spoke of in which there was a disappearance, as you speak of it, of the sulphide ores, except the disappearance which took place when they were removed by mining operations. In the case of the Homestake operations were carried on there for a number of years. And in the other properties I mentioned, sometimes, at different intervals, by different operators, upon more than one occasion mining operations were carried on for a number of years.

As to the Bullwhacker, I have been in that property, but I do not recall distinctly the conditions. I am not inclined to think there was a vein there. I

(Testimony of Horace V. Winchell.)

do not know of the existence of a dyke on that property which was mined to a great extent. If there was any ore taken out of it, I am very certain it was not a dyke. I think I recall some ore being mined, some chrysocolla, silicate of copper, being mined from a north and south fault fracture. That might be called a vein; I would not object to that appellation. I had walls; in places I think it was ten feet between the walls. I have not a very distinct recollection now of the vein in the Bullwhacker; I was only there once, and it was several years ago.

I am very intimately acquainted with the Pittsmont workings and developments. There are indeed veins in that property. Their course or strike varies. Some veins are northeasterly and southwesterly and some dip north and some dip south. From my knowledge of their location, if they continued beyond the Pittsmont ground in their easterly course, they might come into this placer ground. That is a matter of conjecture. It is a wild conjecture by reason of the distance between the two, and because of the known presence of so many faults.

Q. Well, now, you say because of the extreme distance between this ground,—what is the distance between the eastern boundary of the Pittsmont property and the western boundary of this placer ground?

[216] A. I do not know.

Q. Don't you know that they are adjacent; that they are contiguous; that they touch each other?

A. That might be. The property of Montana

(Testimony of Horace V. Winchell.)

touches the property of Idaho, but a vein in Butte cannot be found in Idaho because it goes in that direction.

The WITNESS.—As I notice from the map, Complainant's Exhibit 14, the veins shown and known to exist in the Butte and Boston placer are at the eastern extremity of its territory. How much ground lies to the west between the place where these veins are exposed and the eastern boundary of the Pittsmont, I do not know. I do know that the veins being worked in the Pittsmont are not at the eastern side of their property, but at the western side of the properties, a mile distant from the eastern boundary.

The leads in the western boundary of the Pittsmont are not radically displaced. There are very few veins on the eastern boundary of the Pittsmont property. I know of no extensive faulting of the veins near the western boundary of the Pittsmont property; I know of the existence of veins in the Pittsmont from the western boundary eastward for more than one thousand feet. In that distance they all have their regular strike. There has been no extensive displacement of those veins by reason of faults; however, to the east the veins are very much faulted. In some cases there has been no connection made between these veins to establish their continuity or identity, but the veins which are disclosed in a cross-cut running north and south between Pittsmont No. 1 and Pittsmont No. 2 shafts are considerably faulted, and it is well known that between

(Testimony of Horace V. Winchell.)

the eastern line of the Butte and Boston placer and that cross-cut, there are other faults which have not yet been thoroughly explored, and the amount of their displacement is unknown. Almost anything is possible in a much faulted camp, and for that reason the man who attempts to project a vein for several hundred feet in such a district is taking chances of error which I decline to assume. I cannot tell how close to the eastern boundary line of the Pittsmont ground there is any lead or vein. I do not know how far to the west [217] the entire Butte and Boston place ground extends from the openings which we have been discussing here, and I do not recall the precise distance of the nearest vein in the Pittsmont to its eastern boundary, but I do know that there are no important mining operations in progress upon any veins in the Pittsmont within more than one thousand feet of its eastern boundary. The estimate given in that last answer is based also on memory, and not upon any data which I have here for reference.

Referring to Complainant's Exhibit No. 19, which is a sample taken from the north cross-cut on Complainant's Exhibit 17, I remember getting that sample. I got it from a portion near the floor.

Referring to Complainant's Exhibit 20; I obtained that likewise from the same cross-cut; that was taken from the upper portion of the cut. I got those two pieces and produced them here for the purpose of showing the rapidity of the disappearance of the mineralization; they illustrate it very well. It is

(Testimony of Horace V. Winchell.)

quite possible that I would be able to get material like exhibit 19 from the neighborhood of where I got 20. The movement of these impregnation surface waters is not always directed downward. Material like Exhibit 20 may also be found where I got 19; it might be found ten feet lower, but always in diminishing amount on the whole. That is aplite; it might be called ore. I call it ore by reason of its high mineralization. Quite possibly, in the case of this aplite there has been a replacement of some of the components of the aplite, just the same as in the case of the mineralization of granite. However, the structure of the material of the aplite is still preserved and the replacement has proceeded to a very limited extent. The samples which have been introduced here of copper-stained granite have not been very much replaced either.

Q. Well, take it in the case of granite where you have this red substance or this cuprite, what do you say as to that, whether or not you have not some of the elements of granite remaining, just the same as you have of the aplite in Exhibit 20?

A. Very little,—I think very little indeed.

Q. Well, at any rate, then, it is possible, isn't it, that this enriching fluid, coming into contact with aplite rock, a displacement [218] may take place and the mineralization occur so that it becomes ore?

A. That is not impossible. Aplite in the forming process is not so easily replaced as the granite, and the aplite where surface waters are flowing in the country, in the absence of sulphuric acid, derived

(Testimony of Horace V. Winchell.)

from a decomposition of disseminated pyrite, very rapidly precipitates the copper as a silicate throughout the rock generally. The quartz in the granite has the same effect upon these surface waters as the quartz in the aplite, but inasmuch as there is more quartz in the aplite, the aplite is more stained with copper.

Q. Now, Mr. Winchell, isn't it likewise true in the case of the movement of those enriching waters,—take it in the case of an ordinary vein and where there is an enrichment of the vein filling,—sometimes the walls likewise become enriched where the walls are granite, or where they are aplite?

A. Yes, that is true. Now, that depends largely upon the character of the original fissure. If the fissure is simply one crack and an opening occurs, and the vein matter is simply the filling of that one crack, then the walls may bound the mineralization very loosely, but if the fissure is a compound fissure, made up of a great many cracks or planes of movement, then the mineralization solutions coming from below and entering that fissure may for a time follow between two walls, and by reason of some cross-fracture, or porous rock, pass across to another plane a little farther away, and in that way you may have more than one apparent wall or you may have an apparent mineralization of the rock adjacent to the vein. But where you have the whole thing disseminated throughout the rock, as the pyrite in the granite on the Butte hill, it is done regardless of walls and there are no boundaries, and twenty locations

(Testimony of Horace V. Winchell.)

would not cover it.

The WITNESS.—It is possible, but not so common, to find a mineralization of the walls bounding a fissure so that they would become ore in the case of a single fissure, where you find those adjacent, parallel fissures I spoke about. That would not likely be as true in the case of real mineralization, because there [219] are sulphides in the vein which prevent the deposition of the chrysocolla or the replacement of the aplite.

Q. Well, now, that brings us to the consideration of the chrysocolla. As I understand it, this is the medium through which this discoloration is effected. Am I right?

A. The discoloration consists of a painting or wash of a chrysocolla, yes, sir.

The WITNESS.—This chrysocolla is carried along by descending waters only. When it is taken up by the waters and carried downward, it is pretty hard to tell where you would find it; it goes as far as it is carried. That is the only way it can affect this discoloration. Where the discoloration exists in those cuts, my idea is that it was carried down by descending waters.

Q. Well, where did it come from, or where did it originate, or how did it originate, above, to be picked up by the waters that were descending?

A. It originated by the weathering of the granite near and upon the surface, through thousands of years. The material of the granite has been to a considerable extent removed by erosion and by solu-

(Testimony of Horace V. Winchell.)

tion, but the copper content has been preserved to a considerable extent through the precipitating action of a quartz in the granite and aplite, and especially in the aplite.

Q. Well, now, could you state whether or not this discoloration of this large tract cut here, hundreds of acres that you spoke about, is the result of descending waters, or the lateral movement of waters through the granite?

A. The general movement is descending, but in all cases of descending circulation there are some places where the movement of the waters is lateral. It must have been, however, descending, oxygen-bearing waters, because it deposited an oxygen-bearing mineral, chrysocolla.

The WITNESS.—Of course, the oxygen would exist in the waters whether it was going down or whether it moved laterally, but it was derived from the atmosphere. The waters were meteoric, not volcanic.

I think it is a fair assumption that these veinlets east of the [220] cross-cut—referring to Complainant's Exhibit 17—were probably a continuation of the vein that appears in the cross-cut. The direct distance between the two points of exposure being not over thirty feet, and the strike and dip being the same. At the end of this red line marking that vein, we have blue lines. That would indicate the existence of a fault. As to whether the natural consequence of a fault would be to interrupt the lead, or interrupt the vein in its course, would depend upon

(Testimony of Horace V. Winchell.)

the amount of dislocation. A vein four feet wide would not be interrupted in its course by a fault which had a total throw of one inch. The width of that fault is from four to six inches; the width of the vein is about fourteen inches. The size of the fault has nothing whatever to do with the amount of dislocation along it. A fault one inch in thickness may mark a dislocation of a thousand feet. The existence of this fault here certainly had something to do with the interruption of that vein as it appears upon the map. The vein terminates against the fault, visibly, physically and actually. No man in his sober senses would attempt to tell, without some development, whether or not further east somewhere, or north or south of there, that vein may appear again.

Q. Well, there is not anything about the lead itself or about the vein just exactly where it strikes this fault that would suggest to you that it is the end of it, were it not for the fault?

A. If a vein is faulted, it is faulted into two pieces at least, and there is another piece of that vein somewhere. How far it extends beyond the fault is a matter of the wildest conjecture.

The WITNESS.—It existed somewhere at one time, and probably does still. In this cross-cut we are still speaking about, where this vein appears,—the curved black line,—shows the extremity of the cross-cut at the time the map was made. The cut has been extended since then. I examined and described the ground in the extended portion. There is an additional veinlet, about four inches of aplite;

(Testimony of Horace V. Winchell.)

part of it was ore, not all. By ore, I mean material of commercial value. There was very little alteration of the aplite.

[221] Aplitite, like all other rock, has a certain percentage of pore cavity, or pore space, and it is liable to saturation, and if the separating material be colored, then the color of the aplitite is disguised, and here the aplitite is tinted or colored green by chrysocolla, not necessarily by a replacement of the aplitite, but by an impregnation or saturation with the chrysocolla. Now, that may extend to a partial replacement, and where there is a very large amount of chrysocolla, there has been some replacement. That replacement probably attacked the minor percentage of feldspar and mica which the aplitite contained first and perhaps only, and not to any considerable extent the quartz.

Beyond this fault,—Complainant's Exhibit 17, marked by the blue lines,—the walls or boundaries of the tunnel are granite. The aplitite has been intruded into the granite in sheets, and dykes, as a knife intrudes into a piece of cheese. It is usually vertical, but not always, sometimes horizontally. When you get easterly of the fault in that tunnel the granite is still noticeably discolored, not quite so much as Exhibit 19 of Complainant's, but like sample, Complainant's Exhibit 22, which is already faded and becoming less discolored, because of the evaporation of the moisture which it contained.

I gave you the strike of that vein and the course of it by degrees, and likewise gave you the dip of it. It

(Testimony of Horace V. Winchell.)

is dipping to the north. The course is north eighty degrees east. I went into the Vesuvius workings, but not for the purpose of seeing whether this vein had the element of continuity. I went in there to see what was there. I did not have that in mind at all. The vein was not disclosed there. I did not find any vein there; there is no vein in that working, nor in the cross-cut. It is mostly granite discolored, and one master joint. By a master joint, I mean that when the ground cooled, it participated in that contraction of which I spoke relative to cooling bodies, and the contraction of the granite upon cooling produced throughout the mass of the granite joints. These joints frequently intersect, or abut against each other, making a honeycombed structure in the granite, upon a large scale, and [222] the larger joint against which many of the smaller joints terminate is called the master joint. We have one such master joint in the cross-cut of the Vesuvius shaft. It is a fracture, but it is usually not an open fracture and it has seldom been accompanied by any movements of one portion of the rock relative to the other. These smaller joints terminate against the master joint, and they frequently have different angles. I could illustrate it. (Witness draws diagram which is marked by the Examiner for identification, Defendants' Exhibit No. 55.) Upon Defendants' Exhibit No. 55, I have roughly illustrated the normal joining of granite. The red lines indicate the fine jointing, and the blue line against which many of the red ones terminate, is the master joint.

(Testimony of Horace V. Winchell.)

This master joint is frequently made use of in quarrying granite. The quarry men break their large blocks to the master joints, and their smaller pieces terminate against the small joints. This sketch is not a specific illustration of the Vesuvius; it is just a sketch to illustrate the relation between master joints and minor joints. The master joint to which I referred in the Vesuvius workings can be followed for a distance of about fifteen feet. It disappears into the wall of the cross-cut at a point twenty-four feet south of the shaft, and it scatters and is lost going toward the east before reaching the eastern side of the workings in that direction. I have never seen a body of granite without a master joint in it. There is a very slight oxidation there between the two bodies of granite in this master joint. There is also mineralization, as you please to term it, in the granite itself. It is green stained from one end of the cross-cut to the other, regardless of the master joint. The discoloration is no more marked outside the boundaries of the master joint than within the boundaries of the master joint. Its width at the greatest point is a very remote fraction of an inch. I have no personal knowledge as to whether or not any commercial ore was obtained in the workings there. I saw commercial ore around; I did not see any in the workings of the Vesuvius that I entered. I did not find any place there the mineralization of which was such that [223] commercial ore could be extracted in the workings I examined and saw there. It has no value for mining.

(Testimony of Horace V. Winchell.)

Referring to Complainant's Exhibit 15, which would be the Mullins tunnel, in figuring the twenty-four feet from the bedrock to the surface, there is a little platform built upon the surface at the collar of the shaft, and that is the point from which I measured the depth of the wash; that is from the top of the platform to the top of the bedrock. The top of the platform from which I measured is some distance from the surface of the ground. Both times of my examination there has been too much snow upon the surface of the ground to ascertain definitely the surface conditions. I think there is a small dump there and that platform may possibly be constructed upon a small portion of that dump. There is not any lead in that Hornet discovery. But this discolored material is quite prevalent in that section, and practically equal on all four sides of the shaft. There is a little oxide of copper in the joints in the granite in this cross-cut from the bottom of the Hornet discovery, as it appears on Complainant's Exhibit 16. If you take that and put it in a lead, it is lead matter; where it occurs there, it is surface impregnation in the joints of the granite and it has no part in any vein. It is a superficial discoloration, and will disappear by depth, but I would not be able to tell you at what depth it would disappear, without having gone to that depth. Whenever master joints could conduct surface waters, there might be a discoloration to that depth. Master joints do not usually have a very great extent, two or three hundred feet at the outside, and the general discoloration of

(Testimony of Horace V. Winchell.)

the whole country granite does not extend to the depth of two hundred feet; but some discoloration in the joints goes below that depth. Most of the discoloration disappears before a hundred feet. I am referring to the barest possible stain when I tell you it might be seen in the granite at a depth of two hundred feet. I have encountered ground such as I encounter in those cross-cuts in the Pacific, situated east of the ground in question here, and directly east of the Birtha. I encountered it in the various workings, tunnels and shaft of the Pacific, not far east [224] of the territory in controversy here and in the shaft itself. Yes, sir, with this chrysocolla coloring and also with this oxide of copper, in the cross-cut, and a little azurite and malchite. I do not know of my personal knowledge whether or not any shipments of this material were made from the Pacific mining location, but I have reason to believe that there were shipments made. If it went to the smelter more than once, I have no doubt it was ore.

Q. And seemingly over there on the Pacific, this material thus mineralized, brought to your attention, terminated at some depth, so that you are able to fix in this instance the mineralization as it exists in this cross-cut could not go below forty feet?

A. That is quite true.

The WITNESS.—Now, in order that you may not gather the wrong impression from my testimony and from your answer stating what I said, I will again call attention to the fact that I said the disseminated mineralization throughout the granite would exist

(Testimony of Horace V. Winchell.)

in commercial quantities below that depth; but I also stated that master joint and fault planes might contain some of this ore to a greater depth; and if there were shipments from the Pacific at greater depth than that, they certainly came from the filling of fault fissures and from the vicinity of master joints, and not from disseminated mineralization of the country rock. Now, I have no particular spot in mind at which I measured the downward termination of this character of discoloration or mineralization, but I know of my own observation that it did discontinue downward, and that the country there, although upon the surface it is very widely and noticeably impregnated and stained, is not thus stained at the depth of two hundred and fifty feet.

There is a mineralization of this cross-cut extending from the Hornet discovery northeasterly, and there is also a mineralization of the wash lying above it. You would not be likely to encounter that mineralization as it exists there in that cross-cut containing shipping ore below a depth of perhaps forty or fifty feet deeper.

(Defendants' Exhibit No. 55 was offered and received in evidence.)

The WITNESS.—It is not every vein that develops into a mine; as a matter of fact the percentage of veins becoming mines is very [225] small.

Q. And so likewise, I believe I referred to it in a general way yesterday, in the case of veins even where they acquire such a dignity so that there is a mine, there is sometimes a pinch-out of that vein, is there

(Testimony of Horace V. Winchell.)

not, in its depth, or dip, and a pinching-out of it in its strike, and then an enlargement of it again?

A. I would not say that if a vein pinched out entirely, and was lost for a considerable distance that I should be certain that it was the same vein. But it is undoubtedly true that the walls of veins sometimes approach each other very closely, and may even rest upon each other, or one upon the other, and have in that respect a pinch, soon, however, to open up again with the vein fissure continuous beyond the pinch.

The WITNESS.—And that may be true in relation to the vein on its strike or on its dip. The filling in those two veinlets in this cross-cut in the tunnel, as shown on Complainant's Exhibit 17, is largely aplite, and the walls are granite; and for that reason I stated that I was not at all certain that that was a vein of mineralization from below.

Q. Well, how does that compare with the doctrine that you declared here yesterday that the enriching fluid or material takes more kindly to the granite than to the aplite? Why should not you have a mineralization in this instance, then, in the granite rather than in the aplite?

A. When I made that statement, it was with reference to genuine vein mineralization through the action of ascending waters, and within the limits of a vein fissure or a shear zone. Such mineralization as that replaces granite more readily than aplite, but when surface waters carrying oxygen and a little copper derived from the decay of the granite come into contact with the aplite, there is immediately a greater

(Testimony of Horace V. Winchell.)

percentage of silicic acid or silica to precipitate the copper there, and there is not the sulphuric acid to keep it in solution, and to carry it on. For that reason, this copper impregnation which is so common in that section, and to which I have referred, is more abundant in the vicinity of the aplite dyke. And I mentioned yesterday this fact, that there was some little evidence [226] of movement along this small aplite dyke and therefore there might be some genuine vein filling. But I am satisfied that the larger portion of the copper mineralization visible in that cross-cut is due to the same kind of copper deposition from surface waters as that which impregnates the granite generally in that section. And I say further, just one word, that this granite wall rock to which you refer in that cross-cut is itself impregnated by and discolored by the same chrysocolla. Not to the same extent as the aplite, and for the reason that I have mentioned.

· Q. Now, then, take it in the case of a vein mineralized, with clearly defined walls, have you known of any instances in Butte here, in any of the mines, where the walls themselves become mineralized so as to become ore,—and some territory adjacent to the walls?

A. Yes, that is not uncommon. This is a region of most intense mineralization and of more than one period of mineralization, and there are more than one set of walls, or bounding planes, or internal planes, to the larger veins, and the mineralizing solutions have sometimes entered into a crack or crevice in the

(Testimony of Horace V. Winchell.)

walls, and therein deposited ore in the nature of a spur or gash vein, back of the main vein, and I think it sometimes happens that the wall, originally as a wall, becomes so mineralized and some of the rock adjacent to the wall, that it becomes ore and is shipped as ore.

The WITNESS.—I have made an examination of the vein in the Mullins tunnel, and at the bottom of the shaft in the drift to the east, there was a cave from the hanging-wall, and the hanging-wall country was exposed and it was not mineralized, nor even copper stained as it is in the cross-cut south from the Hornet tunnel. I would not concede that there may not be ore beyond this hanging-wall, but I am willing to say that there is no indication of it there. If you take that ore and that rock and crush it and screen it, you might extract small grains of cuprite here and there which could be shipped, if you concentrated enough of it, but it is not ore. It is not vein and it does not constitute part of a vein filling. If a body of it should exist in density beyond the hanging-wall or say twenty feet of four per cent copper, that would be [227] commercial ore; and if it would go four per cent, then for hundreds of feet across the country, it would be commercial ore.

In the westerly extension from the bottom of the Hornet discovery, marked Complainant's Exhibit 16, that fault is the one fissure that I noticed and that is not very important. I did not observe any fissure having an easterly and westerly strike. I was able to discern very clearly both of the walls of this vein

(Testimony of Horace V. Winchell.)

on its dip, the Hornet, at the lower drift. The vein there was practically of the same width that it was in the Mullins tunnel; I should say it would be wider than four feet. In speaking of the Hornet vein, the lower level, is what I have called the Mullins vein; the vein that is shown on the map here.

Redirect Examination.

(By Mr. SHELTON.)

The WITNESS.—This Defendants' Exhibit 43 consists of two pieces of country rock,—aplite. Aplite is detected from vein quartz by its texture. It is chiefly composed of quartz, but the quartz occurs in little granules or grains, not interlocking with each other but like the quartz grains of a quartzite which was once a sandstone. This can sometimes be seen by the naked eye; but can be better seen by a hand or pocket lens.

There is a very large, persistent and important dyke of quartz porphyry in the Modoc mine. It is referred to in the United States Geological survey report upon this district as the Modoc dyke. There is no dyke of aplite in any way comparable in its size, its extent, its continuity with this quartz porphyry in the Modoc. There are here and there throughout the district dykes of porphyry, but there is no large and striking feature of that sort in the Modoc.

Recross-examination.

(By Mr. NOLAN.)

The WITNESS.—A dyke differs from a fault fissure in this: A fault fissure does not necessarily refer to anything but an open space. A dyke is the

(Testimony of Horace V. Winchell.)

material constituting a tabular, metaliferous mass of igneous origin, differing materially from the enclosing rock. [228] The boundaries may be similar to that of a vein. It differs primarily in its origin; secondarily in its composition.

Q. And now as to its origin. In what respect is it brought into existence differing from a fissure?

A. Dykes occupy fissures. They come into what were at one time fissures in the rocks, but those fissures extended to such depth that the molten material, lava if you please—that is what would be lava if it poured out on the surface—enters the fissure and there consolidates from a state of fusion and forms solid rock. That is a dyke. Veins are not usually formed in that way, nor are dykes usually mineralized so as to become veins. That is, not sufficiently mineralized.

Q. Well, now, what is the standard of mineralization *the, that* you would require in this fissure in order to be a vein, as contradistinguished from a dyke, considering simply that element by itself?

A. It must contain such indication of value as to justify a miner in following it in the pursuit of ore.

The WITNESS.—I say that generally in the case of dykes there is not such mineralization as to warrant or justify a miner in following it in the pursuit of ore. I have known of dykes richly mineralized; there are exceptional occurrences of that sort.

(It was agreed between counsel that the signature of the witness Winchell might be waived to his testimony.)

[Testimony of Evan P. Clark, for Defendants.]

EVAN P. CLARK, duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—My name is Evan P. Clark; I live in Madison County, Montana. At the present time, I am engaged in the business of farming and stock-raising. I have lived in Silver Bow County, Montana. I came to Montana in 1868, and have lived here ever since. It will be five years the 24th of next June that I left here and went to Madison County. I lived in Silver Bow County from 1888 until 1906 or 1907. During the time I lived in Silver Bow County, I was engaged principally in mining—mining for myself and managing [229] properties. I managed properties for Mr. Murray. I engaged in mining for myself as a miner, but not for wages. I had men working for me. In 1886 I sunk the first 200 feet and run the first 500 foot levels of the Edith May, owned by the North Butte Company, myself and associates, and later on I had a lease on the Goldsmith No. 2, myself and partner, and also I had a lease on the West Gem, belonging at that time to the Davis estate. I also had several other leases, among them, the Belmont. During the period from 1888 until 1906 or 1907 I lived in Butte continuously. My experience was confined exclusively to quartz mining. I know a little about placer mining; I have placer mined some.

(Testimony of Evan P. Clark.)

I first became acquainted with the ground known as the Butte and Boston Placer in 1901. I knew it thereafter continuously until I went to Madison County. I have kept in touch with it slightly since that time.

Q. What, if anything, do you know of any placer mining operations being carried on on this ground since you knew it?

By Judge BOURQUIN.—Objected to as immaterial.

A. I do not know of any; never knew of any.

Q. And upon the ground itself, is there any evidence showing placer mining operations were carried on?

By Judge BOURQUIN.—Like objection.

A. Oh, no; no evidence of placer mining.

Q. Is there anything to show that any placer mining operations were carried on in any territory adjacent to it?

By Judge BOURQUIN.—Like objection.

A. Not closely, no, sir.

Q. What do you know as to whether or not any placer mining operations have been carried on south of Silver Bow Creek?

By Judge BOURQUIN.—Objected to as immaterial.

A. I do not know of any.

The WITNESS.—This ground is East of Silver Bow Creek. Up by Meaderville, it would be due east.

I have made discovery of leads and located ground in Madison County; they were located for gold, silver

(Testimony of Evan P. Clark.)

and copper. I became acquainted with this ground at the invitation of my brother and Mr. Mason. I have reason to believe my brother is interested in this litigation. I have made examination of the openings and cuts on the ground. I made examination in 1901; and I have made some within the last week or ten days. There are certain openings that are marked on the ground. I was down shaft No. 1, Defendants' Exhibit 1. [230] I made an examination of that shaft to determine whether there was a lead exposed there. There is a lead there. Its strike is practically east and west. You cannot tell the dip from what you can see of it. I then went to the Rabbit Discovery shaft. I did not go into shaft No. 2, a shaft some little distance east of shaft No. 1. I was not in shaft No. 3. I went into the Rabbit Discovery shaft, it is about four by four, roughly speaking, and about twelve feet deep. I found a lead there. Its strike is easterly and westerly. I also went into the timbered shaft; it is called No. 9, I believe. There is a cross-cut about twenty or twenty-five feet down. The shaft is timbered. You could not see the surface of the walls of the shaft with the timbering on, only where the lagging was taken. I saw a lead in this cross-cut; it is well defined, suitable for all locating purposes to a practical miner and prospector. I noticed a wall, but could not say whether it is the permanent wall of the vein or not, but it is the wall which I would accept for that streak of ore. A prospector would make a valid location under it. The streak of ore is copper ore. I could

(Testimony of Evan P. Clark.)

not tell whether it is commercial ore or not; I could not tell what it would run.

Q. What would you say as to whether or not the vein indications were such in either one of those three openings, or those three shafts, that you as a reasonable man would be justified in locating the ground as a mining claim, and prosecuting work on it as a mining claim?

By Judge BOURQUIN.—Objected to, for the reason that it is immaterial in reference to the point of time so far as the Rabbit Discovery and the timbered shaft are concerned, and immaterial as to shaft No. 1 of any date subsequent to May 11, 1891.

A. There is all the evidence there necessary for the practical miner or prospector to make a legitimate location for quartz, in either one of those exposures.

The WITNESS.—I went into Tunnel 31, the Rabbit Tunnel. I found plenty of nice ore there, commercial ore, in both large and small bodies. I first encountered the ore in the tunnel about twenty feet east of the mouth of the tunnel, in a cross-cut. I encountered about fifteen inches of what we would call first-class ore at the first [231] trip I made in the tunnel. And about three feet of a lower grade with plenty of ore in the face of the cross-cut not reaching the wall. Later on, yesterday morning, I went out there and the cross-cut in the tunnel had been extended showing another fine streak of commercial ore, and the material lying between both of those streaks is what I would call a good second grade ore. As conditions exist there now, including everything

(Testimony of Evan P. Clark.)

between those two different streaks, there would be eleven or twelve feet of ore. There is some stuff in there that you would not take down as ore, but it looks like ore to me as a practical miner. That entire body, for its entire width, is of such a character that I would ship it all. The course of that vein is easterly and westerly; as to dip, it stands fairly straight, leaning, I should judge, a little to the north. We come to that ore again about thirty-five feet in, where the course of the tunnel cuts the ore streak on its course. There is about ten feet of ore there, that is a rough estimate. I should judge, from the looks of the tunnel, that the tunnel has removed a large amount of ore there. The ore body that we encounter in the tunnel is one and the same ore body that we encounter in the cross-cut. Beyond that and approaching the face of the tunnel, there is ore all the way; it shows ore right up to the face of the tunnel.

Q. Well, now, I will get you to state whether or not you can establish any connection between the vein that is exposed in the tunnel and the veins in the shaft that you observed.

By Judge BOURQUIN.—Objected to as based on speculation, incompetent, immaterial.

A. Only by lining up the veins as it shows in the tunnel and the line of the shafts; I would take it to be one and the same vein. That was all the examination I made of this northerly lead.

I then went to the Mullins tunnel. I went down into the Hornet Discovery. I got through the cross-

(Testimony of Evan P. Clark.)

cut from the Hornet Discovery, leading into the tunnel, and also the cross-cut running northwesterly from the bottom of the shaft. I found evidence of lead in the Hornet Discovery shaft, containing copper. The distance from the cross-cut from the Hornet shaft to the tunnel [232] is something like fourteen to sixteen feet. It is ore the entire distance. It is all a part of the one vein that you see in the Hornet shaft. It is two to three per cent ore, not including the Mullins streak. By the Mullins streak I refer to the main rich streak which that tunnel uncovers on its course, and upon which Mullins sunk the winze. Yes, I noticed the south and north walls of the Mullins tunnel. The south wall of the tunnel is not the hanging-wall of the lead, because there is plenty of ore on the south side of that fracture and the farther you get into it the more ore you get. There is no stop to the ore at all, so far as you can see, as far as the development shows. In the Hornet Discovery shaft, there is some little difference in the appearance of the mineralization of the ore body on the different sides of the shaft, but the general character is about all the same. I do not think there is a visible wall in the Hornet Discovery shaft. The material that you encounter in the cross-cut that goes in a northwesterly direction from the bottom of the shaft is much more low grade. It is all ore in the cross-cut running from the bottom of the shaft northeasterly; it is one and the same ore body that you encounter in the cross-cut going from the shaft into the tunnel. When I spoke of the absence of mineraliza-

(Testimony of Evan P. Clark.)

tion and the presence of country rock in a passageway leading from the bottom of the shaft, I have reference to the passageway coming west. In the Hornet shaft, the lead is encountered at the first cross-cut from the tunnel.

Q. I will ask you to state whether or not the lead indications were such in the Hornet Discovery shaft, at the point that you have suggested, that you as a reasonable mining man would be justified in locating the ground, in expending your money in the development of the property, where the upper cross-cut strikes the shaft. A. Yes, sir.

Cross-examination.

(By Judge BOURQUIN.)

I am a brother of Mr. C. C. Clark, the defendant; I live in Madison County; I have been following farming and stockraising five years the 24th of next June. I went from here there. I had been [233] living in Butte up to about five years ago. My principal business in Butte had been mining; I have worked in gambling houses some of the time I was here. I have located claims in and around Butte, that is in Madison County and Deer Lodge County. I located those in Madison County three years ago; they are located in the northwestern part of the county, and are partially developed. I am only now doing the necessary assessment work. I located those in Deer Lodge County in 1890 or 1891.

I knew the Butte and Boston placer first in 1901; I visited it at the request of my brother and Mr. Mason. I think the Hornet tunnel at that time had

(Testimony of Evan P. Clark.)

been run; and the Gulf Discovery and those cross-cuts had also been made at that time I think. That is my recollection. I remember crawling through a little hole there before that tunnel was quite completed from one shaft to the other. I believe it was the Gulf Discovery shaft to the Hornet; I crawled through that hole. That was about 1901. I think it was sometime about the time of the proceedings for the injunction between Mr. Mason and the Butte Land and Investment Company.

Silver Bow Creek has been worked as placer on the west and north side up as far as the Braund house; I cannot tell whether there have been any workings further up or not. I have had experience in placer mining. I worked in placer mining on the Snake River in 1879; at the mouth of Gold Spring Creek, just below Glen's Ferry. Those were not paying placers. This fine flower gold; and we got just as good panning at the foot of our machine as we got at the head. The placers I spoke of having been worked on the north and west side of Silver Bow Creek, are at the foot of the hills containing the Butte Copper mines, as a rule. I made my recent visit to the ground in controversy at the request of my brother and Mr. Mason. I came in from the ranch for that purpose. I first went to shaft No. 1. It was about eighteen feet deep. I did not visit that shaft in 1901. I was on the ground, but I don't know anything about what they call the Rabbit claim in 1901. I referred to the Mullins tunnel. I saw the lead in shaft No. 1 in the north side, completely in

(Testimony of Evan P. Clark.)

the bottom. I noticed it in the walls on the north side a little bit; it don't come up very high. I could not tell which way it was pitching. I [234] saw it in the west end of shaft No. 1 at the same place, at the north side, continuous from the east side to the west side. On the face of the west side, the vein does not extend up the sides of the shaft at all; it is about a foot side on the floor of the shaft; on the west side it may get up above the bottom a little; it does not come up the east wall. It looks like the top, the cap. It looks as though you had just struck it at that point. I did not see any other portion of a lead visible in that shaft No. 1. I examined the walls of the shaft to see if it appeared elsewhere, but I do not think it appeared. I think Mr. Pete Stevens was with me. My brother had asked me to go out and examine the workings there for the purpose of acquainting myself with the conditions so that I could intelligently testify. The material of that lead I would call black oxide of copper, or a sulphate or sulphide; it is black and of an irony nature; it contains copper. That is my opinion. It was thoroughly black, there was granite in this portion I call a lead; decomposed, black vein granite. I took samples, but I did not have them assayed.

I then went to the Rabbit shaft; I found a lead there in the west side; in the wall of the shaft; there is a little hole and digging in there and shows this green carbonate of copper; that comes about two or three feet above the bottom of the shaft; I should judge it is a little more to the north than south side of

(Testimony of Evan P. Clark.)

the shaft. It is about a foot wide at the bottom and feathers out as it comes to the top. I do not think it appears in the east side of the shaft. It would appear in the south side of the wall, but not in the south side of the shaft; it does not appear in any of the walls of the shaft except the west wall. We could see in the neighborhood of two or three feet of the lead lengthways and could determine the strike from that. I should judge it dipped a little to the north; I could not tell anything about the depth of the vein as it appears in shaft No. 1.

Then I went to the timbered shaft. I went down as far as the cross-cut. There was still some shaft below us. I did not notice the lagging above; I only went to this cross-cut to look at this green carbonate ore there. It was about seven, eight or nine feet in the cross-cut to this ore. I saw two different streaks there; not [235] a very big lead. I saw them on the walls of the cross-cut easterly and westerly, on both walls; they were nice looking little veins; I saw what I would call the walls of the streaks, both foot and hanging-walls; the cross-cut must have extended some distance beyond the farthest streak. Those two streaks were only a few feet apart; the country rock there composing the walls was granite. I saw four walls in relation to those streaks. I do not mean to say they are the permanent walls of either one of those veins at all. So far as I could see they were the permanent walls of those two streaks; they formed two separate little veins to my eye. In order to locate a mining claim, as a practical miner, I require a show-

(Testimony of Evan P. Clark.)

ing that will assay either for gold, silver, copper, lead, a space filled with quartz and ledge matter, having at least one well-defined wall. I should judge the ore I saw in those two streaks from the cross-cut in the timbered shaft would run about two per cent in copper. The size of the ore body makes no difference so far as a location is concerned; as far as the size is concerned it would appeal to me as a practical miner, those two streaks. To the practical man sometimes the vein is very small and I might locate that and work on it quite a while expecting it to widen out more than it is shown on the surface. Yes, sir, you can find the country filled with small fissures and true veins from the size of a knife blade up. You could locate them, with the expectation that they would get wider and more valuable. We follow those small streaks. If it carries the right value we would locate anyone we could find. The fact that it carries copper, if only a trace, is sufficient. I say that if I find a vein no larger than that lead pencil, showing mineral and a distinctive copper coloring, it would justify locating.

I went in tunnel 31. After I left the north cross-cut, I next saw the vein about thirty or thirty-five feet farther in the tunnel. It appeared in the north side of the tunnel more strongly than in any other place. It did not show very strongly in the back; I do not think it is below the wash there. It did not show very strong on the south side. The ore body did not show on the south side of the tunnel that I could see; the width of the tunnel had taken out the vein,

(Testimony of Evan P. Clark.)

the ore. The vein is altogether [236] north of the tunnel at the cross-cut, fully twenty or thirty feet. The north wall of the tunnel first cut the vein on its course eastward from the cross-cut about thirty feet east of the cross-cut; the tunnel cut the vein gradually. The vein shows some twelve or fifteen feet on the south side of the tunnel going east before it gets over to the north side. From the developments I could see, I would say that the vein dipped north; I could see both foot and hanging walls. I do not think they both appear in the tunnel after you leave the north cross-cut. I think the south wall was exposed after you leave the cross-cut; that is, that I call the south wall. I saw a very nice hanging-wall yesterday in the cross-cut; the first north cross-cut. The north cross-cut in tunnel 31 is wider up about the breast, I should judge, than it would be at the bottom; it is about five or six wide at the breast. It is wider opposite the cross-cut. After you leave the north cross-cut and get in thirty or thirty-five feet and come to the ore, the tunnel is not more than four or five feet wide at any point, except at the extreme east cross-cut. That extreme east cross-cut extended south from near the face of tunnel 31 is all low-grade ore; all vein stuff. I do not think that cross-cut shows any of the walls of the vein very strongly; I do not think it shows them at all. The southermost wall of the vein does not appear at all on the south side of the tunnel; the ore covers up the wall after the tunnel enters the vein. The south wall must show itself on the south side of the tunnel; I saw it; what

(Testimony of Evan P. Clark.)

I accepted as the wall was there, ten or twelve feet from the point of intersecting that ore, where it is projected through there. What ore I saw and the width of the tunnel added to it I estimated at ten feet. I estimated that the whole tunnel had been in ore, including that on the back which was still in ore. I take it that at that point the tunnel had removed its width of the ore, four or five feet; and I allowed four or five feet more as an estimate. At the face of the tunnel 31, neither of the walls is exposed there; everything is in or in my estimation, on the north side and clear down through the cross-cut south. The ore there is more disseminated than it is in the north cross-cut; it is poorer, leaner; some of those nice little spots of oxide and carbonate, and [237] the rest is vein filling. Near the face of the tunnel 31 the general appearance is shattered and crushed. From where the ore appears in the north side of the tunnel beyond the north cross-cut, I expect it is about eighty feet to the face. From that point of the face, the hanging-wall would still be to the north of the tunnel. I observed on Defendants' Exhibit 1, the respective locations of shafts 1 and 2, tunnel 31, the Rabbit Discovery and shaft No. 9. I cannot say that is all the same vein, taking them as relatively located on Defendants' Exhibit 1. I went down the Hornet Discovery; I saw the evidence of a lead, about the same evidence that I saw in the face of that tunnel. I saw little kidneys or spots of this cuprite and carbonate all through the mass there, and the general mass was vein filling granite, altered granite, granite that is

(Testimony of Evan P. Clark.)

found between the walls of these big veins here in Butte. Altered granite is found within the walls of a vein in the course of forming ore; occasionally it is found outside the walls of veins. Wherever certain chemical processes have been set up, or where the solutions have penetrated or altered it, whether it is within or without a vein. The vein in the Hornet Discovery shaft had been crushed and broken up some. At the bottom of the upper cross-cut, the granite there is pretty well broken up, and from that point into the tunnel it is pretty much the same material. It is continuous from that point; all vein material. It is altered granite and ore, and with occasional kidneys and streaks interlacing through it. This green carbonate in the form of kidneys, or little streaks, appear through that scattered mass of material. The south side of the Hornet shaft is more lean, and might be shaping up for the wall at that point; I could not testify that I saw the wall on the south. I should accept that as a wall in locating a claim, until further development demonstrated different. I guess the wash terminates at the upper cross-cut in the Hornet shaft; right at the roof of the cross-cut. I did not notice any ore in the upper cross-cut walls of the Hornet Discovery shaft. It seems to commence in the roof of the cross-cut, about the height of your waist as you stand up. I went through the lower cross-cut from the discovery to the tunnel; the general mass of material was the same there, altered granite or ore. It was about [238] the same as in the upper cross-cut, with the one exception close to

(Testimony of Evan P. Clark.)

where they come to the enriched streak there, it shows a little stronger. By the enriched streak I mean the vein on which the Hornet tunnel was run. I do not recall much of a fault crossing it there. I would call that a crack between the walls in the ore, more enriched than the other. Between the shaft and the upraise into the Mullins tunnel, this carbonate showing and oxide of copper is scattered here and there; it appears in every shape and condition. I went into the Hornet tunnel as far as I could get; it presented the appearance of a vein excavated by the tunnel and stoped out all along, with both walls showing in appearance. I said the south wall was not the hanging-wall, because there is ore beyond it; by ore I mean this altered granite with kidneys of oxide, or carbonate of copper mixed through it; it is all ore. I did not go into tunnel 37 marked on Defendants' Exhibit 1; I do not remember if I ever visited it or not.

Redirect Examination.

(By Mr. NOLAN.)

Referring to those small leads about which Judge Bourquin asked me, as to whether or not by reason of their smallness I would be justified in making a location on them as a mining claim, I will say that locality would have nothing to do with it; it would make no difference if the vein was around Butte or over in Jefferson County.

There is no difference in the ore and vein filling in this ground in controversy and the vein filling in the large and well-known leads in Butte, only in the

(Testimony of Evan P. Clark.)

quality and the kind of metal. I do not know of any instance in this camp where the showing is better at the depth than I encountered over there in this ground in controversy.

Recross-examination.

(By Judge BOURQUIN.)

I do not know any mines on the west side of Silver Bow Creek where those kidneys of cuprite copper oxide appears like they do in the Butte and Boston Placer. It is not a fact that the ore bodies in the mines of Butte that are worked and have been worked for years, appear usually in solid bodies as you work along the vein and not in [239] scattered bodies. They are very much scattered; they are all bunched. One bunch is sometimes bigger than another. Big bunches make big mines. I know of one bunch in the Rarus on the four hundred and fifty foot level, over three hundred feet wide, called the crushed zone, containing such vein matter as is on the surface here on the Butte and Boston placer, only the values were a sulphide instead of an oxide. You can call it a fault if you want to, but I was all through that property with all those different experts. The veins have been crossed by a fault and the vein within the fault has been crushed and broken up; you find this green carbonate like you find in the Butte and Boston placer all through it, but not the red oxide. It is the same kind of green carbonate to a practical miner. After a copper mine has been opened up for some time it will become oxidized; the sulphide will change to oxide of copper; that is the common knowledge

(Testimony of Evan P. Clark.)

among miners. I do not mean that the body of the ore changes, but that from contact with the air it will become discolored and green stained on the surface, perfectly blue vitriol; that is almost a green carbonate. These bunches that I spoke of in the mines on the Butte hill are scattered and each one is surrounded by the altered granite like you see in the Hornet. They are scattered and not connected at all; I got broke trying to find them. That was in the Edith May at a depth of two hundred feet. I found it there in bunches, isolated and separate from each other, and surrounded by the altered granite, but within the walls of the vein all the time.

(Subscribed by the witness and sworn to before the master on January 5th, 1912.)

**[Testimony of Ernest Watson, for Defendants
(Recalled).]**

ERNEST WATSON, heretofore duly called and sworn as a witness on behalf of the defendants, being recalled, testified as follows:

Cross-examination.

(By Mr. SHELTON.)

The WITNESS.—In tunnel 36 we have, as I have said before, granite and aplite and also having an iron stained material, and also material which might have been aplite at one time, with [240] most of the feldspar removed, therefore leaving it quartz, which might be evidence of a vein. If I find material of that nature in a mineralized section, I would take it as a vein. Taking a broad definition

(Testimony of Ernest Watson.)

of a vein there; that is something of the nature of a definition Mr. Winchell gave. The definition I gave you was something of a legal definition, taken from Morrison's Mining Rights; it is a handbook of Morrison's Mining Rights for 1905. That is not a broad definition. Those separate seams in there would be taken as veins from the definition I gave. What I found there was aplite; some of the feldspar had been removed from some of the aplite; that is, probably you could get pure specimens of aplite. I said there were seams within the aplite from which the feldspar had been partially removed, or entirely removed, therefore leaving it quartz, from my definition of a vein. This quartz was metaliferous; quartz is not metal, it is a mineral. This stringer was metaliferous in that it contained iron. Citing Mr. Winchell's definition, as a tabular deposit of mineral, or mineral-bearing rock in place, within definite boundaries, containing such indications of value as to justify the miner in following it in the pursuit of ore, I will say that was a vein. I will explain here that this definition is vague inasmuch as it puts in that sentence which states that a miner would be justified in following it. That is indefinite because different miners have different ideas as to what would justify following. My answer is that according to that definition what I found in tunnel 36 could be a vein; it is a vein; it would justify the miner to pursue it and follow it in the pursuit of ore. I will say that the width of the vein varies from the smallest fraction of an inch to an inch and slightly

(Testimony of Ernest Watson.)

over; there are innumerable of such stringers there; they contain chiefly quartz. I do not know whether they contain any metal except iron, but considering the section, if I should develop them, I would expect to find copper ore. The copper is not visible in the vein, but you could probably get an assay; there is nothing in there to indicate to me as a mining engineer that there is any copper present to the naked eye; I did not take any samples; but I suppose in a sample taken from such a [241] stringer would run less than one per cent in copper. I know as a matter of fact that a sample taken from the country rock almost any place in the district will show a small percentage of copper, but not as much or greater than I say you would expect to find in the samples from those stringers, because, as I said, those quartz stringers were derived from an alteration of the aplite, and hence more susceptible to alteration than the surrounding rock by filtration and otherwise. What is disclosed there would not exactly be called a dyke, by that I mean that its boundaries are more or less irregular. A dyke, in my opinion, is a fissure made and filled by plutonic action. By plutonic action I mean to explain the igneous activity in there as contradistinguished from volcanic activity; that is, it is of a deep seated origin. It is not a dyke, because I have no reason to believe that it is filling a fissure, and it grades into the granite also. I have no evidence that it is older than the granite, inasmuch as I have not found xenoliths or intrusions into the granite. The aplite

(Testimony of Ernest Watson.)

is there, enclosed in granite, but the aplite grades into the granite, and hence there is no evidence of the fissure that is made by the aplite being crushed into the granite. The general rock of the country is gray granite, which enclosed the aplite. I took no samples from that. The only thing that would answer to a vein are those small stringers.

Tunnel 35 is in wash nearly the entire length. They do strike bedrock at the face. There is no vein there that I know of; I examined it. The bedrock at tunnel 35 is aplite.

In shaft No. 19, I said I found talc and altered granite. I could not tell you from the amount of work done there whether there is a vein there or not.

There is a vein in the Hornet Discovery, and in the Hornet tunnel, tunnel No. 34. It does not necessarily have any connection with what I have called a vein in tunnel 36. The matter in those several openings which you have mentioned is more or less different from that found in tunnel 34, and to state conclusively whether there is a connection between the veins and that of tunnel 34 and in the others, is conjecture. If you desire my opinion, taking the course [242] of the vein as displayed in the Hornet tunnel and the general direction of these other openings from the Hornet, it would be a reasonable assumption that there is some possible connection between what was shown in these other tunnels and the Hornet tunnel.

When I said there was a vein in the Hornet shaft

(Testimony of Ernest Watson.)

and the Hornet tunnel, I could consider those as one and the strike is northeast and southwest. The strike of the stringer of quartz from which Defendants' Exhibit 43 was taken is easterly and westerly; if I said it was north of west and south of east it would not be far from being accurate. I did not take that as indicating the course of the vein. That streak of quartz is what I call quartz, or what is given here as Exhibit 43 is very insignificant to the other showings on this property. The strike of that vein is northeast and southwest. I traversed the lower cross-cut running from the Hornet shaft in a northeasterly direction. I found little seams of red oxide of copper. I found seams in which there were silicate of copper and red oxide of copper, both of the materials in the same vein. I should judge the strike of those little seams was easterly and westerly. In the upper cross-cut I encountered what you might call seams, and there is also kidneys of cuprite and chrysocolla within this mass. That is the cross-cut running from the Mullins tunnel into the Hornet shaft. I did not trace those seams enough to give a definite explanation as to their strike, and the kidneys would not necessarily have any strike. The strike of the vein was not necessarily the strike of those seams. I said they might indicate the strike more or less, inasmuch as it can be said that they have an easterly and westerly strike, that is, until you get to the west. According to the points of the compass going east of north, why then you could call any strike within that a north and south

(Testimony of Ernest Watson.)

strike,—northerly and southerly. The other portion of the ninety degree angle would be the same. An easterly and westerly direction would include the north of west and the south of east direction. The strike of those little seams might be north of west and south of east, but of course the kidneys shown there would not have any strike at all.

[243] Q. Well, where is the footwall of that vein? A. The footwall of that vein?

Q. Yes?

A. It is somewhere north of the north side of that tunnel.

Q. How far north? A. I do not know.

Q. You made no examination that would enable you to say where it is? A. Not definitely; no.

Q. It might be any distance north, according to your judgment, might it?

A. Any reasonable distance north?

Q. What do you mean by any reasonable distance north?

A. Well, I would not expect it to be as far north as the mines on the Hill.

Q. Might it be a hundred feet north?

A. It might.

Q. Two hundred? A. It might.

Q. Three hundred? A. It might.

Q. Four hundred? A. It might.

Q. Five hundred?

A. It might be anywhere north of there.

Q. A thousand feet north, would you say that it might be a thousand feet north?

(Testimony of Ernest Watson.)

A. I would not say that at all. I say this is all probability. I say that the footwall is not shown there.

Q. The hanging-wall is where?

A. The hanging-wall is just about as indefinite as the footwall.

Q. It is not disclosed in the Hornet shaft, is it?

A. I hardly think so.

Q. Nor is the cross-cut which runs in a westerly, or southwesterly direction from the Hornet shaft?

A. No, sir.

[244] Q. There is a little talc seam there. You do not consider that a wall?

A. I did not. I said it might possibly be taken as a wall.

Q. What do you mean when you say that it might possibly be taken as a wall?

A. Just exactly what I said.

Q. Then you mean you did not take it as a wall?

A. No, sir. I said it could be but that I did not consider it as a wall.

Q. The wall at some indefinite distance further south? A. Yes, sir.

Q. And that might be as far as a thousand feet.

A. Might be anywhere, but I will say here that there is stringers shown in the Mullins tunnel the entire length as an apparent definite hanging and footwall of that streak.

The WITNESS.—The real footwall and the real hanging-wall may be some indefinite distance to the north and south.

(Testimony of Ernest Watson.)

There is a well-defined streak showing the entire length of that tunnel, and this would necessarily justify me in giving it a strike. Those little stringers do not necessarily give the strike of the main vein, but as a rule, if the stringer has any considerable length it will usually be the same direction as the strike of the main vein. I do give great weight to the strike of what I call that streak in the Mullins tunnel. I am of the opinion that the strike of the vein coincides with the strike of the streak shown in the Mullins tunnel. The strike should be the same as shown in the tunnel for that distance, outside of that will be mere conjecture. Its length is about one hundred and fifty feet; approximately, as shown. The tunnel is a little longer than that. I said I did not know exactly where the walls are, and I said they might be anywhere, but usually they would be found near the rich streaks. The reason I say this is because in some instances where I have seen rich streaks on the foot and hanging-walls, with the wall material replaced to form ore,—the particular case I have in mind is the Bingham porphyry deposit, at Bingham, Utah,—at that place they have a quartzite formation, with a rich hanging-wall and footwall streak. The intermediate material contains disseminated ore, and the whole thing for a width of five hundred feet is sent as ore, shipped as ore, without any sorting whatever. The walls in that case are more or less intermediate. It is not quarried there; I was in it a distance of fourteen hundred feet.

[245] Returning to this streak, there may be

(Testimony of Ernest Watson.)

parallel fissures to this fissure within the vein, the Hornet vein. And they may extend on either side of this Mullins streak, north of it and south of it; they might not necessarily be parallel with it; they might vary we will say to the extent of twenty-five degrees. We will assume that there is a fissure, and that it is the most northerly of these; we are assuming one entire vein. The footwall of that fissure would constitute the footwall of the vein; and if there is one to the south, the most southerly one, then the hanging-wall of that fissure would constitute the wall in the vein. To give the exact strike of the vein, you would have to have the direction of both of those fissures. In general the streak in the Mullins tunnel would be the same, but it would perhaps vary several degrees, possibly at much as twenty-five degrees. With the considerations we have assumed, you could not tell the strike of the Mullins vein. I have not explored sufficiently far north to encounter what I would take to be the true footwall; and I have not explored far enough south to get the hanging-wall.

Q. So, as a matter of fact, you are unable to give the strike of the vein at the present time?

A. But in the absence of those conditions, of other parallel fissures, roughly parallel fissures, why the main seam shown would be taken as giving the strike of that vein. In the absence of the other conditions, that is the only thing you have.

The WITNESS.—By roughly parallel I mean varying several degrees. The mineralized solutions would extend farther on one side, farther at one place

(Testimony of Ernest Watson.)

than it would at another; and to get the strike the boundary of the vein, north and south, would have to be taken into consideration in determining the strike of the vein.

I found a vein in the first cross-cut running north from tunnel 31. The vein first appears about twenty-two feet north from the entrance of the cross-cut; it dips towards the north; I think that is the footwall of the vein we encountered there. Then you pass northeastwardly along the tunnel, and you see the vein again. You encounter it thirty-three feet from the mouth of that north cross-cut. That would correspond roughly to the representation as [246] it is on Complainant's Exhibit No. 17. What I encounter in the tunnel is again, in my judgment, the footwall of the vein. I do not think I had the hanging-wall. I think the footwall exposed at those points would represent the footwall of the vein; the strike would be northeast and southwest between those two points. As shown in other openings, it is not the same angle that it is there; by going easterly it seems to have been dislocated a little. I have no data going west, but I know of nothing that would indicate a change in that direction. Assuming that there was no change and no fault, it would extend westerly in the same course; and that would not take it in the direction of shaft No. 3 or the Olivia, or shaft No. 1. I have no knowledge of any faults between those places. At that point the vein would be running away from those shafts instead of toward them.

(Testimony of Ernest Watson.)

I took some samples in the Hornet cross-cut, in the lower and in the upper cross-cuts. In taking the samples in the upper cross-cut I began in the tunnel; took two samples, one for exhibition and another for assaying. The one for assaying was taken from the west side, approximately a foot and a half from the bottom and for a distance of five feet in a north and south direction. The samples for exhibition I took from the bottom five feet from the mouth of the cross-cut, toward the east side. I took the next sample for assaying again from the east side. I skipped two posts there. I could not get behind them. The two posts would be approximately a foot. That would make fifteen feet I sampled. That was taken from the east side, about as high on the wall as the others. I took a sample for exhibition; that was taken from the bottom, near the east side. I took another one for assaying on the west side, because of the fill of the Gulf shaft. The floor slopes toward the mouth of the cross-cut at that point, so the distance from the floor at which the sample was taken would vary from one to two and a half feet. I sampled for a distance there of eleven feet.

Q. That would make a distance of six and nine is fifteen and eleven is twenty-six feet. Did that take you out of the Hornet shaft?

[247] A. Well, measuring from the center of that tunnel,—that is the Mullins tunnel,—to the shaft, the distance would be closer to thirty feet than twenty, because the walls here are rounded,—at the beginning where sample No. 1 was taken, but the dis-

(Testimony of Ernest Watson.)

tance would increase if taken from the center of the tunnel to the shaft.

The WITNESS.—At any rate, my last sample took me out about to the Hornet shaft. I took a sample there for exhibition; I took that in the bottom on the west side, and back about five feet from the Hornet shaft. It was taken as much from the bottom as the side. It is right at the intersection of the vertical wall and the floor. Referring to Complainant's Exhibit 15. The first sample for exhibition was taken about an inch or so to the east of that blue line, running in a northerly and southerly direction through what is called the Gulf discovery; that would be two or three feet. It would be nearer to the wall than to that blue line. The next one was taken near to that blue line. This blue line represents the north and south fault fissure on that map. There is no fault showing where I got the sample for exhibition,—at the exact point. I took both samples from the floor on the east side. I got the same material on the west side, and could get it the whole width of the bottom at that point. I did not find a streak there from which I took these samples, unless you consider that entire floor is a streak.

I was in the cross-cut shown on Complainant's Exhibit 16. I said after going north for a certain distance, the opening turned to the right, and that I would call that a drift. What I call a drift corresponds to the red portion of that map. The other, or southerly portion of that opening I call a cross-cut. Just after I had turned to the right, following the

(Testimony of Ernest Watson.)

course of that drift, I saw two walls there; those two walls dipped to the south. There is a smooth plane there which extends for some considerable distance. I would not call the wall on the south side granite at that point. It is too highly mineralized to become granite. There is an opening at the point where that blue line is represented about four or five inches in width. It will vary from four to six; might go as high as eight.

[248] That has the appearance of a fault fissure. I think it is a fault fissure; it is approximately vertical.

Q. Dips somewhat to the east, does it, so that when you follow up on that fault fissure you will reach the place where the blue line is shown on Complainant's Exhibit 15?

A. Yes, sir. Now, I want to explain at this point that the reason I do not say that wall is granite is because when granite rock becomes so highly mineralized that some of its important constituents have become removed or changed, it ceases to become granite and some other nomenclature should be used.

The WITNESS.—I would not say slightly altered. I noticed that fault plane was opened, but whether some one picked out some material that was in the fault I don't know. The material in this fault fissure does not differ materially in appearance from the material which composes the wall. I cannot say that there was any clayey substance within the fault.

Q. Anything there that looked slightly like clay,

(Testimony of Ernest Watson.)

which had become impregnated with the copper solution?

A. If that impregnation had been sufficient to cause the material to contain a sufficient quantity of copper to form an important constituent out of the material, then it would cease to be called clay and would be called ore.

The WITNESS.—It did not look as though this had taken place any more than in any other parts of the same vicinity. It did not differ much from the walls at that point. I do not think the walls of the fault are composed of granite. On the west side of the fault plane, you will see altered granite, but on the east side I would not call the walls or the ore shown there granite. On the west side I determine it is altered granite from its appearance and the nature of its constituents; I can tell from looking at it. By looking at it I can see with the naked eye that the structure of the original granite is there, but if a microscopic examination were made it might be called a monzonite. On the east side the wall is green stained material, which I would call ore, getting away from the name granite, because it has changed from granite, and I think a [249] different nomenclature should be used for it then. If you go far enough east, I guess you could find the granite on the east side of the wall; you would arrive at that conclusion from the displacement of the material on the west side. A fault fissure does not necessarily have anything to do with the nature of the walls. A fault fissure is a fracture accompanied by dislocation, and

(Testimony of Ernest Watson.)

the walls have nothing to do with it. We could have a slipping on quartzite and limestone, if we had the limestone, and that would be no criterion as to whether there was a fault or not. In this instance, if you have granite on one side, you need not necessarily have granite or aplite on the other. You can have granite on one side and ore on the other for a short distance. For instance, referring to Complainant's Exhibit 17, if we assume that on the west side of this blue line we have ore, and we will admit that that is a fault as has been shown here,—then if that is granite on the other side, and we have a combination of ore on one side and granite on the other. If a portion of the vein slipped south, as indicated on Exhibit 16, for complainant, if you got far enough away, you could have granite on one side and granite on the other, but on each side of the fault you will find ore. What I showed you on the map, the red material, is supposed to represent ore as it is shown on both sides of that fault. Of course the fault extends across the vein, and the vein not being entirely dislocated for a portion of the distance, there is vein matter on both sides of the fault. However, I have described a place where there was granite on one side and ore on the other; there is granite shown here; that is granite rock. You can have granite on one side and ore on the other side of the north and south fault, only on the supposition originally the vein was as represented on Complainant's Exhibit 15, without the dislocation, and that the limits of the vein are the limits of the red streak

(Testimony of Ernest Watson.)

shown on that map. The samples that I took in these two cross-cuts, the lower cross-cut running northwesterly, and the upper cross-cut running northwesterly from the Hornet shaft, I said went higher than two per cent. The highest I have in the cross-cut is three, that is No. 2; that was taken from the second nine feet from the west [250] side in the upper cross-cut. The average of all of those would not be considerably less than two per cent. I have not any lead material which figured less than two per cent. With proper metallurgical conditions that would be ore. I mean by that, it could be treated in a mill, that is, if we had a concentrating mill that would operate that material, which is not an impossibility,—that material is ore,—and with the conditions as they are operated in some properties where the higher grade stopes are kept to carry the poorer ones on, under certain conditions that would be called ore. It could be treated with the enrichment from the other richer streaks within the vein. Also, if you had a large mass of material that would average three or two or even as low as one and seven-eighths per cent copper, it could be treated. I do not know the extent of that. If the extent is great enough, it could be treated. I could not say positively that there is material enough there to justify the operation.

I did not go into the opening shown on the map, Complainant's Exhibit 15, to the west,—the boundaries of the opening that mark the green lines.

I have examined Complainant's Exhibit No. 21; that does not show any extent of mineralization.

(Testimony of Ernest Watson.)

That is not necessarily the kind of material that was taken from the cross-cut just westerly from the Hornet shaft, because we could have extensive ore bodies extending eastward and westward, north of this point from which this sample was taken. If our vein continued on the strike we have assumed, easterly and westerly,—it probably would pass through that cross-cut to the west, and even if it did it would be possible to find samples such as Exhibit 21 there. I can take pieces of rock as large as that from the deep mines and show no mineralization; it would make no difference that that was taken near the surface. If it were taken near the surface, and was in place as you say has been testified to, it doesn't necessarily show anything as to the extent of mineralization. A body of copper ore could exist there of the size that has been mentioned, and that near the surface and within the vein, and you can find a piece of rock as clear and unstained as [251] that. In certain forms, copper is soluble in water. Chrysocolla is copper silicate, and is very little soluble in water, but if the water contains any alkaline carbonate in its solution, it is very easily soluble. Cold water will dissolve quartz to some extent, very slightly, however. There would necessarily be a free circulation of water through the vein and along the vein, more so than in the solid granite on either side of it. These openings or fissures in the rock would form easier passageways for the solutions than the surrounding rock, but the rock of this vicinity consists of rock which has more or less joint planes in it

(Testimony of Ernest Watson.)

and is fairly permeable to solutions. These assays that I took I said would show the silicate; I directed the assayer to determine the quantity of silicate. I did not consider that of any great importance. In taking the samples from the cross-cut, I took them in the vicinity of this north and south fault; the fault cuts the vein. Yes, in the neighborhood of the fault, you would expect a little greater mineralization than elsewhere.

I said my definition of a vein was the legal definition, but to be exact, I am stating that from memory, not from copies read here, and if there is any discrepancy, it will be due to my poor recollection. I obtained the idea of it from a legal book. Of course, there are various legal definitions for a vein; that is, what a court would take as a good definition of a vein. I am not attempting to qualify as a legal expert, but I said I got my definition from Morrison's Mining Rights, but that is not the definition I would give in a geological sense. I could not state whether Morrison's Mining Rights Handbook of 1905 gives a definition similar to the one I gave, and states that it is from Bainbridge on Mines; I do not recognize that name. On the page following there is something to the effect that a vein of such a character as that the miner would follow it in the pursuit of ore has been added as a practical test in determining what is a vein; that is the reason I said there was a legal definition. My definition was, a vein is a more or less tabular mass of metalliferous material, differing materially from the enclosing

(Testimony of Ernest Watson.)

rock. Tabular, as used there, distinguishes it from irregular or [252] circular, or other different shapes; that is, the top of a table is tabular. From that definition, any tabular, metalliferous mass, differing materially from the enclosing rock is a vein.

Q. Well, the deposits from the precipitating plants from the tailings dumps is a tabular deposit of a metalliferous mass. For instance, there are along Silver Bow Creek a lot of tailings dumps that contain,—by the action of the elements the copper is bleached out and the surface is stained green and blue for a distance of fifteen or twenty miles down along Silver Bow Creek?

A. Yes, sir.

Q. Is that a vein?

A. Not necessarily so. That brings in a different definition if that was,—differing materially from that definition. It might possibly be taken as a vein, but from a geological standpoint, it would not.

Q. From your definition, it would be a vein?

A. Yes, sir.

Q. You do not think a miner would go and locate on it, and that his location would be valid?

A. Hardly.

Q. There is some fault with your definition, isn't there?

A. There is.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—Speaking about the strike of this lead in the Hornet tunnel and in connection with

(Testimony of Ernest Watson.)

the direction of some streaks that I observed in the ore body, and also in connection with the inquiry that was made as to the inability to tell the course of the lead without disclosing the walls, it is within the lines of my experience that the walls are more or less irregular in their course, but for short distances they will be fairly regular. In the case of ore bodies enclosed within walls, the walls vary throughout the entire length of the lead; they sometimes come together; that is what is termed pinching out of the ore body. But aside from the geology of the thing and in practical mining, and to the miner, there is a way by which he determines the strike of the lead or the course of it when he makes his location. He assumes some sort of a strike when he lays out his claim; that is to do so he must necessarily take something as a guide. He gets fifteen hundred feet along the lead; and when he makes his location he has in some way to determine the strike of the lead. Assuming that the prospector has but one shaft, [253] the required distance in depth, and there is a well-defined seam shown in that shaft, the direction of the seam will give him data enough, or sufficient to lay out his claim. In giving the direction of the ore body that we encounter in this Mullins tunnel, we are limited to the size of the opening. The ore body is something over one hundred and fifty feet long. With that ore body exposed, and with the evidence internally existing, I am able to give a general course to it, but for the exact number of degrees I could not.

I said something about difficulty being experienced

(Testimony of Ernest Watson.)

in determining what the walls are by reason of the mineralization of the material that ostensibly appears to be walls, and cited an instance down in Utah where the ore body was about five hundred feet wide. Take it in the case of this vein as it exists in this Mullins tunnel, and as it is discernible in the lower drift, by reason of the condition of the smoothness of the wall rock there they would appear to be walls, but those walls show high mineralization and the surrounding rock shows a considerable amount of copper upon the face, and therefore I say that the walls are more or less indeterminate. I say the ore body will extend beyond those walls as shown in the lower cross-cut. There is small difference in the character of mineralization between the ore body beyond the wall and the ore body enclosed within the walls. In my experience, in the case of veins generally, the mineralization is not equal the entire vein filling material.

There has been something said about a fault fissure, whose strike is north and south, that is encountered in this drift from the cross-cut from the bottom of the Hornet discovery. This cross-cut,—referring to complainant's map 16,—extends from the Hornet discovery as it appears on this map in a northeasterly direction until we strike this oblique line appearing on the map. In my judgment the mineralization of the ore or material that you encounter in this cross-cut would not be due to the material enclosed in the fault fissure, but it might be more greatly mineralized than the rock farther away.

(Testimony of Ernest Watson.)

I say that the ore body that you encounter in those two cross-cuts from the Hornet discovery, assuming that it runs about [254] two per cent, under certain circumstances can be profitably handled. Aside from taking the entire ore body and concentrating it, it could be sorted and worked profitably in my judgment. And aside from sorting, if there were twenty-five feet of ore in that lower cross-cut, as it existed, running two and four-tenths per cent, and with enough eastern and western strike, it could be handled, but to finance it is more or less doubtful.

Q. But aside from handling it and operating it at a profit, simply considering for the purpose of locating it and for the purpose of developing it, how would it appeal to you then as a mining man or a geologist, or as a mining engineer?

A. It would appear as a very good prospect and of sufficient value to locate on for development purposes.

The WITNESS.—My definition of a vein from a geological standpoint, is a tabular deposit of mineral, or mineral-bearing rock, in place within definite boundaries, and younger than both walls. The reason I say younger in this case is to eliminate the location of phosphate lands both as lode and placer claims, which is being done at the present time in Idaho, or has been done. That is more a definition from a geological than from a prospector's standpoint. Recurring to the definition for a moment and for the purpose of applying it in the case of walls as contradistinguished from the metalliferous mass

(Testimony of Ernest Watson.)

enclosed by the walls, you are only able to determine the walls by the character of the mineralization.

Referring to Complainant's Exhibit 21, that is quartz, but so far as I am able to discern with the naked eye, without any mineralization. From eye inspection, I would say that it would not carry any particular value; this yellow stain will make it contain a small percentage of iron perhaps. It does not necessarily follow that the interior is the same as the exterior; it is, in my judgment, material that would be found in some veins. You will find particles in an ore body or vein without mineralization. For instance, large bodies of pure calcite are found within old veins that show no mineralization whatever.

Referring to Complainant's Exhibit or Map 17, I said that if this vein were of the strike or the course such as shown on the map, and [255] continued, that it would not be possible to get it into the Rabbit Discovery 9 or into shafts 1 and 2. I am not able to say, from the examination I made of this upper lead or vein, that the strike as shown on the map is the correct strike of the vein, because the width of the vein is not determined. In the examinations that I have made there, I could not say that I have located the hanging-wall exactly. In any examination I have made there I was not able to ascertain the width of the vein. Assuming that the uncovered ore body is correctly delineated on the map as to strike, that does not necessarily determine the character of the strike of the vein that exists there. Those dotted lines simply represent what is supposed to be the

(Testimony of Ernest Watson.)

course or strike of the vein.

I went down the Rabbit Discovery and the No. 9 shaft. The ore disclosed in those two openings is very similar to the ore existing in the vein in that tunnel. If, as a matter of fact, the ore body or the vein as it is disclosed in tunnel 31, and as shown on complainant's map 17, pursues the strike as shown on that map, it would hardly be possible to encounter it in the Rabbit Discovery. And if the vein whose strike is shown on complainant's map 17 is the same vein that is disclosed in the Rabbit Discovery, with reference to whether the strike as shown upon complainant's map is correct or not I will say that the strike as shown there is more or less correct for that particular part of the vein, but we know that there is faulting between the two points, or at least one fault, we know of, and there may be more; and that might have something to do with the divergence of the vein,—the location of the vein, so as to account for the appearance of it there, and without a regular strike.

Recross-examination.

(By Mr. SHELTON.)

The WITNESS.—Referring to the Mullins tunnel No. 34, on Defendants' Exhibit 1, I say there is a wall there of high mineralization; there is a north and south fault cutting the vein there. I cannot say that there is a greater mineralization outside of the walls of the Mullins vein along the line of that fault fissure, because I can get just as good values elsewhere away from that fault. [256] You would

(Testimony of Ernest Watson.)

naturally expect to have a little greater mineralization along in the vicinity of this north and south fault, that is for the entire mass, but that doesn't necessarily mean that you could not obtain as high mineralization somewhere else as you could there. Most of my samples were not taken along the vicinity of this north and south fault; I said I took some there. My samples were all taken from the upper and lower cross-cuts, and the Hornet shaft, and the cross-cuts north and south of the Hornet shaft. I did not go over to the cross-cut to the west and make an examination; that is, the one that is shown in green on Complainant's Exhibit 15; and I did not go any distance to the east; only in the Mullins tunnel. I took some samples from this cross-cut to the southwest, but it was a slightly different character of material, and ran about four-tenths of one per cent. In taking my samples in the Hornet shaft I did not sample from the top to the bottom, but took samples from a small area. It would be possible to select places where there was a little kidney or deposit of mineral, so as to get much higher values than sampling the entire ground, but if I was after higher results, I would not come in here with results as low as four-tenths of one per cent, because I could get samples there that would run fifteen, twenty and twenty-five per cent copper, but that is not the way the samples were taken.

I understand that the Hornet Discovery was made in 1891. I know that the price of copper in 1906 and 1907 was much higher than it is now.

(Testimony of Ernest Watson.)

Q. And you don't know of anything which would have prevented all that material being taken out and treated in the meantime that was of sufficient value?

Mr. NOLAN.—I object to that as not being proper question, not developing any fact. As a matter of fact, there may be a thousand and one reasons. He is not asked as to why the complainants in this case have done certain things and their nonoperation of the property may be due to the fact that they desired to permit this ground to remain there, so as to utilize it as evidence that the ground hadn't value. It may be due to the fact that a bond was given to prevent the operation [257] of the ground by the defendants. The liability upon that bond may be a deterrent cause against the operation of that ground or the working of that ground. And it is likewise incompetent for the reason that the witness is asked as to what the motives of the complainants may be in doing and in not doing certain things. For those reasons, the inquiry is improper.

The WITNESS.—I do not know that there is anything to prevent them mining the ore. Sometimes I have seen good properties lie idle for a long period of time. Even in that Hornet with the price of copper as it is to-day, there is some ore that could be extracted at a profit. I would not call them little kidneys. There is a streak on the west side of that shaft from six to twelve inches in width. If that would continue for any distance, it could be extracted. I only saw it in one place and the other side of the shaft is a fill, therefore it is not seen in

(Testimony of Ernest Watson.)

that side of the shaft. I couldn't determine how far it would continue.

With reference to sorting this ore and treating it at a profit, the only thing we have to judge of its extent by is the openings that are there at the present time, and if the ore continues to the eastward and westward, as it is shown in the Mullins tunnel and in the Hornet shaft and the cross-cuts between the two, then I say that could be worked with sorting. If the conditions remain the same between the Hornet tunnel and the Mullins shaft, it could be worked at a profit, but the values might get greater or they might get less. As a practical miner I would not think of exploring the solid formation for little pieces of ore; but under conditions of the sort we have here, a well-defined stringer, I would. That well-defined stringer is what we call the Mullins vein. Leaving out the Mullins vein altogether, what I have seen in the Hornet Discovery would lead me to do further work. Of course, if I wished to determine what was in the adjacent ground, I would have to do more work than is done there, because those openings do not answer for the entire region surrounding that Mullins vein. In making this statement with reference to the showing in the Hornet Discovery, I have in mind the region in the vicinity of the Hornet shaft and to the south [258] of the Mullins vein, as disclosed, and that is all. If there was just the Hornet shaft, I would have very little knowledge as to what was contained in the ground surrounding it, but there is sufficient in the

(Testimony of Ernest Watson.)

Hornet shaft to induce one to go ahead with work; there is enough there to induce me to make further explorations with the hope of discovering larger bodies of ore. In the Hornet shaft there is material which would partially pay for the development work, as I perceive it; that is, I mean the ore that would be extracted in the development could be sorted and shipped as the quantity was sufficient, to help pay the expenses of development. As developments have shown, that stringer, as we will call it, which is shown in the north side of the Hornet shaft, at a distance of seventeen feet from the surface, which has a slight easterly and westerly trend, and which has a more or less dip toward the north,—the material in that stringer would more than pay for the development. That is the stringer that is shown at a depth of seventeen feet from the surface and is from one foot to two feet thick and from this stringer the specimens which I referred to, that I obtained from the bottom of the cross-cut, from the upper level, were obtained. I said the stringer appeared on the north side of the Hornet shaft; it does not appear in the bottom of that shaft. The bottom of the shaft,—referring particularly to the south side of the shaft, is decomposed material, consisting chiefly of quartz and very little stained with iron. That stringer is disclosed all along the floor of the cross-cut and on the north side of the shaft. Taking that one seam which varies from one to two feet thick, and as it is exposed on only the one side of the shaft, and as that is exposed on the north side of

(Testimony of Ernest Watson.)

the shaft, I would judge that the strike would be easterly and westerly. I say the dip would bring it towards the main Mullins vein; the dip is slightly to the north. You understood me correctly to say a moment ago that I found this stringer all along the bottom of the cross-cut running from the Mullins shaft to the Hornet tunnel. That can very easily be the same stringer, which has a slight dip and occurs in the vertical shaft seventeen feet below the surface; it has a width of about a foot, but that width is measured vertically, [259] and that would be easy enough to go over to the Hornet tunnel. For instance, you can have a strata of either limestone or sandstone, with a slight dip toward the north, which will be exposed on a horizontal tunnel its entire length. I think this one is exposed for its entire length.

Q. Now, your shaft being vertical, or dipping slightly to the north, will you explain to us how that can appear all along on the bottom of the cross-cut, which has a length of thirty feet?

A. Yes, sir. (Draws diagram on sheet of paper.) Now, referring to the figure which I have drawn, as we look at it this is the east side of the shaft, that is marked with a letter "E." These two diverging lines in red, toward letter "N" is made to represent the upper cross-cut of the Hornet tunnel, running toward the north. Then referring to the other figure on this sheet, we are looking at the north side of the shaft, standing at the south. The dotted line represents where the cross-cut runs north to the Hornet

(Testimony of Ernest Watson.)

tunnel. Just at the point where the cross-cut meets the shaft, the stringer which we have been talking about is shown in blue, close to the bottom of the cross-cut. It will come up near the cross-cut, a little, if the cross-cut was exactly level. Now, in referring to the first figure, this stringer can have a northerly dip and with the floor of the tunnel having a gradual rise, not quite so steep as the seam toward the Hor-net shaft, then that seam can be shown in the floor of the cross-cut. In other words, the stringer forms a portion of the floor of the cross-cut. The cross-cut has broken into the stringer, so it would not be just above in all places, it would be below, because this stringer is shown in various places on the floor. Now, I did not examine every square inch of surface in that tunnel floor, and as the walls slope toward the bottom, it might in those places get out of the seam. At the point where the tunnel reaches the shaft, the depth of the bottom of the cross-cut from the surface of the Hor-net shaft is something more than seventeen feet; about seventeen and a half feet. The Hor-net shaft is thirty-three feet deep. I do not know the distance of solid material exactly between the two cross-cuts. This stringer, is practically flat [260] with a slight tip toward the north, and should be disclosed on all sides of the Hor-net shaft, but is not for this reason. The east side of the shaft at that point is a fill; the south side of the shaft at that point is a fill; and the west side of the shaft at that point, there is an opening the sides of which are loose and more or less brecciated, and this stringer

(Testimony of Ernest Watson.)

cannot be seen there. There is also the original floor of that tunnel going toward the west, as I remember it, is practically filled with debris, and that might account for not seeing that seam there. The place I have located this stringer is several feet below bed-rock. I cannot say positively whether that stringer shows in that cross-cut to the southwest, but it does show slightly beyond the shaft. It shows slightly on the walls of the upper cross-cut, close to the bottom. If the wall begins right where the bottom leaves off, then you could possibly say there would be a little in the wall, but not up to a great height at all.

Coming back to the Hornet shaft, the northeasterly and southwesterly side of the shaft is made ground; the easterly side is filled to within six feet of the bottom of the shaft. The stringer shows in the openings to the cross-cut, that is at the mouth of the cross-cut, just where the cross-cut breaks into the shaft. It would be on the sides of the cross-cut there, because the floor of the cross-cut beyond that, toward the north, is on a lower level than at that point there. This stringer is not visible along the floor of the cross-cut, clear from the Hornet Discovery to the Mullins tunnel. If I would answer that yes, I would be going a little bit beyond my knowledge, because I have not examined it for all the distance on either side, but I have obtained the same nature of material in different parts of the floor of that cross-cut, therefore I assume that it does extend, fairly close at least, to the Mullins vein here on the map.

Q. Now, if I understand you rightly, you assume

(Testimony of Ernest Watson.)

that it extends clear into the Mullins tunnel because you have obtained the same character of material on the floor of the cross-cut?

A. Yes, sir, and from the nature of its dip as shown along the sides of the first few feet of the little opening from the shaft to [261] the cross-cut.

The WITNESS.—That is called a stringer; I have given it a dip and a strike; that necessarily implies that there is an enclosing rock. The enclosing rock is an altered, a replaced granite. A stringer, as in this case, would be coincident with Winchell's term veinlet, perhaps, and it is just some seam or opening, within the main body of an ore body, which carries a little higher grade material than the surrounding body. A stringer is not necessarily an off shoot from a vein; and it does not necessarily connect with a vein, because if we have two veins more or less parallel, we can have those connected by a very large mass of ore, which need not necessarily be called a stringer. The entire mass might then be called a system of what we would call a gash or vein.

Q. You never have heard the term stringer applied to a body of ore within a vein, which was higher grade than some of the other vein filling?

A. I have. That is a common practice with miners. For instance, if we look at a face of ore and see a banded streak of copper glance, the ordinary miner will call that a stringer of copper glance in the face of the cross-cut or stope.

The WITNESS.—It is a possibility that what I have taken for a stringer in the bottom of the cross-

(Testimony of Ernest Watson.)

cut was the ore along the north and south fault, which runs through that cross-cut. You would find more values in the bottom of the cross-cut than you would in the top, supposing that there is a north and south fault running through there, because the back of the cross-cut is in wash. We have a north and south fault there; I have said that the walls do show slightly in that little opening between the shaft. Assuming that you have not the walls of the vein, that your footwall is farther to the north than the Mullins tunnel, and that your hanging-wall is farther to the south than the Hornet shaft, it would not be an unusual thing at all to find in the ore body a streak of ore nearly flat, dipping toward the north. As a rule, streaks of ore run with the veins, either at the foot or hanging-wall, but in many places you will find places where these seams take a flat course, and then fold and have a more or less vertical course. I know of such an occurrence [262] in the 2,400 of the Speculator; they ran onto just a little stringer of ore which they had in the back holes of the cross-cut for, I will say, at least twenty-five feet. Then, immediately they went through that, and it came to be seen that it took a more vertical course at that point. This case had a good grade of ore in it; it was flat, and then turned to a vertical trend. But it is not unusual to find within any ore body stringers which have any direction.

Q. Well, if there was such a stringer there, don't you think that the people who run this cross-cut from the Gulf Discovery into the Mullins tunnel would

(Testimony of Ernest Watson.)

have mined in that stringer beyond the limits of the cross-cut,—if there was such a stringer there, they would have taken it out and not confined it to narrow limits of the cross-cut?

A. Well, I have not said that stringer went beyond the cross-cut, and I have no reason to believe that it does or does not. There is no opening to show that, to my knowledge. It is confined to the cross-cut so far as I could see. Whether it proceeds either north or south is out of my realm of knowledge. If I could assume that it went north or south, I would have just as much reason to assume that these easterly and westerly veins continued on east and west.

The WITNESS.—I said the material in tunnel 31 was similar to that found in the Rabbit Discovery, and something similar to that found in the Hornet Discovery. Inasmuch as there is no openings sufficiently close together between the Rabbit Discovery and tunnel 31,—that is, inasmuch as there is not an opening between the two,—to state that it is the same vein would be more or less conjecture. I do not think the vein in the Rabbit Discovery is the same as the vein in the Hornet shaft; the material is similar. I know of one fault between the Rabbit Discovery and tunnel 31; that would have the effect, to some extent, of dislocating the vein. It would be just an opinion, but I am inclined to think the vein in the Rabbit Discovery is the same as the vein in tunnel 31. My reason for thinking so is, first from locality; next similarity of material, and the dip [263] of the two bodies. The Rabbit Discovery

(Testimony of Ernest Watson.)

is just east of the point in tunnel 31 where the fault occurs. Taking it from this map, the strike in tunnel 31 is northeast and southwest, but my impression was that it was not quite so much north of east as shown there. I testified that in the face of that tunnel there is material similar to that found back in the cross-cut towards the north and also in the Rabbit Discovery. In a measure, I thought what occurred in the face of the tunnel was a continuation of this same vein; and as shown by the fact that the small opening just to the north of the cross-cut, to the south there is material of a green stain, similar to that found in the opening further back, and again to the north of that there is a seam, trending easterly and westerly, which is shown in that little opening just north of the cross-cut to the south, and in that cross-cut to the south there is another seam shown, with an easterly and westerly trend, and those seams could be taken as seams within the vein. I think they are. Those seams shown there are not the true walls of the vein shown back in that cross-cut to the north. If the vein is shown there, it does not necessarily follow that it would occur down on the Rabbit Discovery. The width of the vein shown in the Rabbit Discovery is three to six inches of ore; I think the strike at that point would be northeast and southwest. The strike is not exactly the same, but you see in taking the strike in the small distance given in the Rabbit Discovery, there might be some error as to the strike. Then, again, in any vein, taking small portions here and there, you could get strikes

(Testimony of Ernest Watson.)

which vary from northeast to southwest to northwest and southeast. There is a fault at any rate between the Rabbit Discovery and the vein shown in the easterly end of the vein shown in tunnel 31. I could not attempt to say how much it has dislocated the vein. To state absolutely that the vein shown in tunnel 31 is the same as that shown in the Rabbit Discovery and other openings to the north and east, a direct connection between them would have to be made. I was on the ground there the first of the year. When I testified before I said that the west end of that vein was apparently thrown toward the south. If the west end of the vein is [264] thrown toward the south of this fault, the relative direction of the easterly end would be toward the north. You would therefore not necessarily look up to the north of the Rabbit Discovery and to the north of the east end of tunnel 31, because other faults come in, which would tend to throw that back into the neighborhood of the Rabbit Discovery. I have no idea that such a thing does take place. I said I could not tell from the data I have whether the vein in the Rabbit Discovery is the same vein as in tunnel 31, and I do not think any one could state absolutely, unless there was a direct connection between the two. I said Mr. Winchell's definition was a pretty fair definition of a vein; the first part of it is good.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—There is nothing to indicate to me that the little body of ore in the Hornet shaft is

(Testimony of Ernest Watson.)

all that there is there. And if you only had that one shaft with a seam of that sort exposed in it, you would have no reason to say, but your inclination would be rather that there was more material there. There are developments since that shaft was sunk showing that there is an extension of that vein beyond the limits of that shaft; that cross-cut shows the ore. I said that stringer dips slightly to the north; it is nearly flat. The rich seams within a vein may have any strike. It does not necessarily follow that a fault will occasion any displacement of the vein itself; that is, extending from wall to wall, but it must cause displacement of the adjacent sides of the fault.

Q. At any rate, the existence of the stringer in the way in which it appears and with your knowledge of the conditions as disclosed in the cross-cut and in the Mullins tunnel, I want you to state whether or not that interferes with your judgment that you have heretofore expressed, that that vein has a strike east and west?

A. No, sir, that has nothing to do with my judgment as to the strike of the Mullins vein.

Recross-examination.

(By Mr. SHELTON.)

The WITNESS.—(Sketch handed to the Examiner by Mr. [265] Shelton and marked for identification Complainant's Exhibit 24.) This stringer, measured vertically, has a width of a foot to a foot and a half. I took samples from it in the Hornet shaft. The samples showed upon analysis three and

(Testimony of Ernest Watson.)

two-tenths per cent copper, that is taken for a distance of six feet, that would be across the stringer. I examined shaft No. 9.

Q. Now, if that shaft had been sunk to a depth of from ten to eighteen feet in 1895, and this Hornet shaft had been opened up as to disclose the stringer indicated on Complainant's Exhibit 24, and you had an opportunity to prospect the ground and develop it, which one of those shafts would you have gone to work in?

A. Well, that is a question of will. But from what I have seen in the Hornet shaft, I would have worked there, and as I did not see anything at the depth of eighteen feet in shaft No. 9, owing to the fact that it was timbered, I cannot enter into any comparison at all as to which was the better.

The WITNESS.—The only vein in shaft No. 9 is in the cross-cut, twenty-five feet below the surface. Assuming that there was not any other vein disclosed in the shaft, nothing there but a hole in the ground, and I had a fairly good grade of ore in another shaft, naturally I would select the shaft in which there was ore.

Q. And if you knew of some one having had that opportunity, and that person had selected shaft No. 9, the one in which there was no vein, you assume that this stringer was not uncovered at that time,—wouldn't you?

A. No, not necessarily so, because there is other things that would enter in. For instance, if just assuming these conditions,—if these holes were on

(Testimony of Ernest Watson.)

two claims, and the time of the year was such that work had to be done on the other to hold it, you would not be blamed for passing one to do the work on the other. There is no particular reason why one hole should be abandoned and the other worked, for the time being, but ultimately I believe there would possibly be a reason.

The WITNESS.—When I was out on this ground on January 1st, I went out to the end of this cross-cut on tunnel 31,—the first cross-cut to the north. I have not been out there since. I could not say [266] whether the cross-cut has been since driven beyond that vein or not. I know Mr. S. V. Kemper by sight. There were two gentlemen there at the time I was taking my samples from this stringer, shown on Complainant's Exhibit 24, and as I got through taking the sample I came out into that hole and he,—when I was taking it,—he came in and said "Excuse me; could I get in this hole?" That was the gentleman, Mr. Kemper.

(Subscribed by the witness and sworn to before the master.)

[Testimony of William Mayger, for Defendants.]

WILLIAM MAYGER, duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—I live at Helena, Montana; I have lived in this State and territory since 1864. My

(Testimony of William Mayger.)

practical business has been mining all of this time. I am at present manager of the St. Louis Mining and Milling Company of Montana at Marysville. Prior to the organization of that company I operated mines there myself. After the operation of the company, mining operations were carried on under my superintendence, more or less extensively since 1887. In 1878 and '9, I spent a year or two over here in Butte, was interested in the Centennial Mill below here, and afterwards sold out my interest in the mill and moved back to Marysville again. During the year or two that I was here I interested myself in the mineral conditions of this county only in the examination of the different mines that were opened at that time. I had some interests in mines here at that time, but I let them all go. My business and experience has not been entirely in connection with quartz mining. I commenced quartz mining about 1875. Previous to that I was placer mining. Since 1875, my business has been more or less with quartz mining.

I have visited this ground in controversy known as the Butte and Boston placer. Mr. Mason was with me and showed me the various shafts and levels and tunnels up there, but I did not go into all of them. I went into some of them. Some of them were so filled with snow and they had no means of access and I did not go into them.

[267] Q. In the progress of this trial thus far, we have been referring to two leads upon this ground. One is known as the north lead and the other as the

(Testimony of William Mayger.)

more southerly lead, did you make any examination of any openings upon any one of them?

A. Most of my examinations were made on what they call the north lead. I was through the south lead. My chief examination was conducted on the north lead and openings.

The WITNESS.—I saw some of the shafts were staked and marked as to the names, but I did not pay any attention to these, because I had these all on the map, and Mr. Mason would tell me as I came to a shaft what it was. I was in shaft No. 1, and in shaft No. 2. From these we passed to shaft No. 3; it was full of snow; the dump I saw there was more or less quartz material, that is fissure material. We also went into what they call tunnel 31, and the Vesuvius shaft, and through the various cross-cuts on the bottom.

Shaft number 1 is cut by a number of stratas of quartz, going down almost vertically. Undoubtedly they were quartz and more or less mineral stain. I did not see much copper about them but I did see iron stain about them. I have samples of them that I took. Their appearance was such, and the manner in which they existed was such that a reasonable mining man, in the exercise of ordinary judgment, would be justified in locating the ground by reason of the exposure there. If I had sunk the shaft, I should have sunk it deeper. This (exhibiting sample) is quartz that I found in the shaft. It was in place; I dug it out myself, both at the east and west side of the shaft. I can tell that it is mineralized without

(Testimony of William Mayger.)

an assay only so far as I can see the iron indication in it; as to any other minerals, I could not say. As it lay there in the shaft, I could not tell whether or not there was any wall. Each of those different stratas of quartz had sides to them, but you could not tell whether it was a wall of the fissure or not. The sides I speak of differed in appearance from these samples I have here. The indications on the sample there are as to what they are on either side. I could tell the strike; it was comparatively east and west. I had no compass with me at the time, and I take the position of the shaft and their course from the map. All I could do was to take [268] the course of the shaft as laid down on the map. In speaking of east and west I do not speak of it as due east or due west, just easterly and westerly.

(The samples referred to by the witness offered and received in evidence, and marked Defendant's Exhibit 56.)

After leaving the shaft, we then went to shaft No. 2; it was a shaft similar to shaft No. 1, about the same depth, and probably twenty-five feet farther east; the same indications were in that shaft as in No. 1. The strike of the lead was apparently the same. I have some samples that I took out of that shaft (producing samples) showing the quartz and mineral stain, this material came from a quartz strata going down; that is quartz. Without making any assay test I could tell that it contains iron, that shows for itself. The disclosure there as to a lead is of such a character that I as a reasonable mining man would

(Testimony of William Mayger.)

be justified in locating the ground and prospecting it.

(Samples offered in evidence, received and marked Defendants' Exhibit 57.)

I should judge that this material is exposed for almost the width of the shaft; almost the width of the shaft was cut by these vertical stratas of quartz. They all belong to the one source. I did not notice any walls, true or false, except the sides of the stratas, and I do not think you could call those walls at all. The sides of the stratas would be compared with the stuff I have here. It would be granite.

Q. What do you say as to whether or not the line of cleavage between this material that is here and the granite was clearly defined and visible?

A. Well, as much so as a small seam of quartz of that size could be. It don't show the movement that you see sometimes in the fissure vein.

I am not a geologist, but a practical miner, mining as many years as I have, I have studied rocks more or less. From a practical miner's standpoint, as a miner looks at it, a vein is anything that might fill a fissure, whether it be the walls or country rock, or what not. If it fills between those walls of the original [269] fissure as it was formed, and anything between those walls would be called a vein. It would make no difference whether it had any mineral or not, because veins do not always carry minerals in all places; that is sometimes you would strike a vein that would be mineralized in one portion of it and not in another, but it is in that zone that the miner expects to find mineral. In any case where you have a fissure

(Testimony of William Mayger.)

and this vein filling, even though you have not the mineral at that particular point, you are certainly likely to encounter it somewhere else.

We went to tunnel 31 after leaving shaft No. 2. I saw strong evidence in the back end of that tunnel of a fissure,—no question of it,—passing through the end of the tunnel. I went into the cross-cut running to the north from the tunnel. From the beginning of the cross-cut into within about ten or twelve feet of the end it shows granite with more or less copper stain here and there, in different places, and about ten or twelve feet from the end there is a strong vein of copper-stained ore, what I should call commercial ore, on the west side,—or on the east side of that body,—or east side of the cross-cut. The ore is disclosed. It shows itself about eighteen inches in width. On the other side, the southwest side, it is somewhat smaller, probably a foot. The passing to the end of the cross-cut,—the cross-cut had been extended to where the face seemed to be entirely in granite,—and about a foot before reaching the face was another strong vein of mineral, and I got samples from both of these places. The face of the tunnel, that is the end of the tunnel, seems to have passed through and beyond a fissure that the tunnel crosses; and just before reaching the end, there is a wall line that shows a great deal of movement, and on that wall line there is more or less of the copper ore. That would be on the left-hand side of the tunnel as you go in; that is, it would be the northwest side of the tunnel. With reference to the fault and movement I spoke of there,

(Testimony of William Mayger.)

when that fissure was formed, it was a fault, or course, because it displaced the country. That is what I mean by a fault. Where it is mineralized you call it a fissure vein. When it is unmineralized, you call it generally just simply a [270] fault. And in speaking of just on the end of the tunnel, I should call it a mineral vein. There is fault, however, before you reach that point, and that has displaced the former fissure, and to some extent, but how much I could not say. This fault that I speak of which affected the fissure on its strike, runs northwest and southeast; it is the one that is marked here,—I presume this is where it is marked,—referring to the blue line on Complainant's Exhibit 17. I cannot tell that map as well as I can tell the one I had with me at the time. Referring to Defendant's Exhibit 1, and this tunnel 31, just about on this line (indicating on map) where the fault crosses; the large red line is the course of that fault as near as I can place it. I said I got samples from those two veins in the cross-cut. (Witness produces samples.) This sample was taken from the first body of ore that I spoke about that we encountered going in from the mouth of the cross-cut; it is about ten or twelve feet back from the end of the cross-cut. I would not be able to tell what it is without an analysis, because there are about forty kinds of copper ore, and one cannot say just what kind it is without analysis. I should call the vein stone itself a quartz. I would say it is mineralized with copper. (Offered and received in evidence and marked Defendants' Exhibit 58.)

(Testimony of William Mayger.)

I obtained the other sample I have here in the cross-cut about one foot from the face of the tunnel, where this lead or vein crosses through there. It seems to be the other side of the fissure. The body of material is about twelve inches wide there; it contains copper. (Sample offered and received in evidence, and marked Defendants' Exhibit 59). I would designate the rock itself as ore.

I said there were two deposits of ore in that cross-cut, two streaks of ore; these two streaks of ore are apart from each other about ten feet. I noticed the character of material between those two streaks and think it was mineralized, and in my opinion had the appearance of fissure filling, that is, it was within a fissure. Taking those two streaks by themselves, unless this granite that showed itself on the face of this cross-cut might be called a wall—and with the amount of work done there I could not say positively [271] whether it was or not—I could not say there were walls. I think those two streaks, with the material intervening, are within one fissure and constitute the filling of the fissure, but the fissure may extend beyond that.

Q. Did you notice in the examination that you made there, or were the workings of such a character as to disclose, whether or not the fissure's walls are within sight?

A. Only in the back end of the level, and, I think these depositions of mineral in the cross-cuts belong to the same vein that discloses the wall in the back end of the main tunnel.

(Testimony of William Mayger.)

The WITNESS.—The wall I saw back there would be the hanging-wall, if I remember right. I never took special notice of that; I think it pitches away from the tunnel; that would make it the hanging-wall. My impression was it was dipping to the north, but I would not be positive about that. The wall I consider the wall was right at this pencil mark, through here (indicating on map); that seems to be about the location of it. The tunnel has passed through it and gone into apparently granite. This little gough here shows the vein also, and the back in this cross-cut to the south. That is referring to the cross-cut running to the south. There is also another wall which seems to be parallel to the wall which is in the main level. That other wall, if it has any relation to this fissure, would possibly be the foot side of the fissure.

We went down into the Vesuvius shaft and through the levels and cross-cuts from the bottom of that shaft. I think I saw the evidence of a fissure passing through one of the cross-cuts of that level. I have a sample here that I took from that. (Witness produces sample.) I do not remember exactly, but I think this is from two places, at one point north of the shaft and the other point south of the shaft. This material would indicate a vein; I would call it quartz, principally, carrying copper. The body in which it was existed there in place; we dug it out ourselves from the solid formation. This was bounded by other rock, by granite. I would not call them walls by any means. They are walls to this strata, and differing in appearance from that, yes, sir. I

(Testimony of William Mayger.)

can only tell the strike by the way the level runs. I can give you that course. That would be running northeasterly [272] and southwesterly, and in the north side of the shaft would be more east than northerly.

(Exhibit offered in evidence and marked Defendants' Exhibit 60.)

Q. Now, then, what do you say, Mr. Mayger, as to whether or not you could establish any connection as to the leads being one and the same lead, or being different leads, that you encounter in shaft 1 and 2, in the tunnel and in the Vesuvius discovery?

A. Well, I think that what we discovered in shaft No. 1, and the vein that was disclosed in the tunnel, possibly is the same vein. Whether that is the same as what is in the Vesuvius shaft, or not, I would not attempt to say, because the workings did not show enough to judge. Assuming that the lead of the vein that exists in the shafts 1 and 2 and in the tunnel, continues easterly, pursuing the strike that it did pursue in its movements between the points indicated, it would go in the direction of the Vesuvius. It might possibly be a little further north, judging from the surveys. But my judgment is that the lead that you find in the two shafts and in the tunnel are one and the same, and that is a fissure vein without any question.

I also examined the Hornet lead, but did not take any sample. I went through what is called the south vein, but simply went through it and looked at the various levels that we could get into there. There is

(Testimony of William Mayger.)

quite a lot of ore disclosed in different places. The main level that we went through, connected with the shaft there, in my opinion is outside of the vein. The vein is further east and they have used the side of the vein as being the side of the level,—the wall of the level,—especially in the back end. I did not get any samples because I was only in there the first day I was out there, and the second day I did not have time to reach it. My principal investigation was confined to the northerly lead, so called, as far as samples were concerned, but there was any quantity of ore in the other place that samples could be obtained from.

Q. Well, now, you went down in the Hornet discovery shaft, didn't you, or did you know it by that name? It is the shaft that you encounter when you go from the tunnel in a southerly direction [273] to that cross-cut?

A. Can you tell me on the map here?

Q. Well, now (indicating on map), here is the tunnel going in here and there is that Mullins tunnel, that is down two hundred feet, and before you go out on the Mullins tunnel, there is the shaft known as the Hornet discovery.

A. We went into this tunnel to the end and then came back and crossed it, but apparently another tunnel that came to about the surface, to where you could see daylight any way, and then we went down a third raise there,—a winze,—to back under where we were above and down below there. Coming back from that lower place, there is considerable ore

(Testimony of William Mayger.)

within the foot,—that shows considerable ore in the floor.

The WITNESS.—We crossed the Mullins shaft and went to the face, the face of that level,—the vein itself is further south,—the level would indicate that it is right on the vein instead of through it. I think the vein is disclosed in the tunnel, but not in the face of the tunnel; it is to the south. There is undoubtedly commercial ore in the excavation that exists there; it is uncovered and I would say it is a true fissure vein; I do not think there is any question about it. As to the northerly vein in the openings where it is disclosed there, I do not think there is any question about that being a fissure as disclosed in the end of the tunnel.

Cross-examination.

(By Judge BOURQUIN.)

The WITNESS.—I was living in Butte during a portion of 1879. I did not run the old Centennial Mill. I bought my interest in the mill from John Howe, and started in to fix it up, and when it was about completed I sold my interest to Mr. Rainsford. I did not do any actual mining in Silver Bow County. I had been following quartz mining in Montana before I came to Butte, around Marysville, where I have been practically ever since in mining, excepting trips in various sections of the country, from Canada to Utah and Colorado. I went up to Canada to develop a mine, Alberta. I was up there pretty nearly two years off and on. I was running that property at the same mine and also running the property at

(Testimony of William Mayger.)

Marysville. In [274] Alberta I was mining for copper ore. I had no interest in it more than a contract. The formation there is limestone. I have not had any other experience in mining for copper. Most of my mining has been for gold and silver. The country where I was mining in Alberta was altogether different from the Butte district; it was dolomite and limestone. And at Marysville I have been engaged practically wholly in gold quartz mining. I am operating the St. Louis Mining Company's property there at the present time. We treat some of our ores there and some of them we ship. I do not remember the names of the mines I had interests in in Butte in 1878 and 1879; that was a long time ago. They were on the Butte Hill; I got an interest from John Howe at the time they were unpatented. I think one of them was just beyond the Mountain Chief, and the other one was down here, between here and the location of the Centennial Mill. There was a number of manganese mines around here at that time that nobody wanted. At the time I was here, nobody around here was mining copper. It was more for silver. I abandoned them and let them go. When I moved to Marysville, I paid no more attention to them. Of course, being unpatented, I presume they had been located by somebody else. I am not a graduate from any school of engineering or geology. I have applied what theoretical knowledge I could gain to the practical knowledge I obtained by mining itself.

As a miner, my description of a vein is anything

(Testimony of William Mayger.)

between two walls of a fissure. Now, of course, we have more than one kind of veins which geologists will tell you sometimes are gash veins, and contact veins, and all that sort of thing, and the description would probably be different in each one, but when I speak of a fissure vein I always take it to be anything between the walls of the fissure, and a contract vein would be anything in the contact.

Q. You say there would be no mineral necessary to make it a vein, so long as there was a fissure with filling in it?

A. Yes, sir. You want mineral in some portion of the vein. The mineral portion of the vein does not extend from one portion to the other. The mineral comes up in shoots, forms of shoots, and ores have been deposited from below by the thermal waters and gases coming [275] up through the fissures. It might be absolutely barren in places. You would find country rock between the walls, just as pure country rock as you will find in the country on either side,—that is, unchanged, and therefore would not have the mineral in it. There would be places so compact that the thermal waters and vapors could not come through it, and that portion of your vein or fissure would be unmineralized, and the other portion would be mineralized. I would call it a part of the same vein; all the same fissure. My definition is anything that would fill a fissure, whether country rock or not. That would not answer just as well for a description of a dyke. A dyke would be altogether different from the fissure, because a dyke is an intru-

(Testimony of William Mayger.)

sive rock. A dyke is formed through the fissure, by being forced there by pressure in its molten state, and thereby makes a dyke. A fissure is not formed in the same way at all. A fissure is a crack in the earth. The material of a dyke is erupted and in a molten state and fills that fissure just the same as it would go into a mold. Then it becomes a dyke. It has two walls. The filling might be anything. It might carry mineral. I would call country rock the walls of the particular fissure as exposed on the surface. It might be granite in one instance and slate in another. In order to justify location, a vein must contain mineral.

Q. That is to say, if where you found this vein which bore a trace of copper or iron or silver or gold, it would justify location.

A. Well, leave iron out and I will say yes, because iron forms in beds and is altogether different.

The WITNESS.—I was out to this ground on the 2nd and 3rd of this month. I first entered shaft No. 1. I saw what I call stratas of quartz on both sides of that shaft; that is, the east and west ends, reaching from the timbers down. It was about the height of a man's head from the bottom, five or six feet. I would not be positive how many of those stratas I saw, but I think several. They were from possibly an inch and a half to two or three inches wide. They were so near vertical that I did not pay any attention to the dip, but I think there was a dip to the north; that is my recollection, that there was a small dip to the north, probably going [276] down like,—eighty or eighty-five degrees. I think I saw three or four stratas

(Testimony of William Mayger.)

ranging from an inch up to two or three inches. There might be some smaller than an inch. I was looking at the full width of the shaft, which was four or five feet. I do not know how many there were, or what distance they were apart,—whether they were an inch apart or a foot apart. The country rock was granite. I do not know what you call aplite; I do not know any rock called aplite. I know I would be able to distinguish aplite from quartz. Aplite, as I understand the word, is changed granite. I know the difference between granite and quartz. I know the make-up and composition of quartz; it is principally silicon. I know what is called aplite is changed granite, and I know the composition of granite. Granite is hornblende, feldspar and mica. In some instances hornblende or feldspar may be changed to other matter such as quartz.

Calling my attention to Complainant's Exhibit 21, I should call that principally silica; it might be quartzite. As I say, I don't know what you call aplite. The name is not familiar with me, except it is always laid down in the books as being a changed granite. There certainly is no portion of granite in that rock. There is silica in it. There is silica in granite in the nature of quartz, but not in that. There is feldspar in granite. I do not see any feldspar in Exhibit 21. I could tell it if it was there. I do not know that is aplite; I do not know the definition of aplite as you term it. Taking our own exhibit 56, from shaft No. 1, the smaller of the two large pieces, I would not call that aplite; I call this

(Testimony of William Mayger.)

quartz, because the formation of it is silica. That is the principal reason I have for calling it quartz.

Q. Well, would you take any rock, the formation of which was principally silica, and call that quartz?

A. Not unless it was carrying mineral. It might be quartzite.

The WITNESS.—This small piece shown me from Defendants' Exhibit 56 has got iron in it; I classify it as quartz from the fact that it is a silicious rock. Taking the larger piece brought from shaft No. 1, Defendants' Exhibit 56, that is not what is termed granite stained with iron. There are some indications of granite [277] with it, but it is principally quartz. It is a silicious rock with iron, iron stain through it. There is manganese on there. There is not a large amount of silica in granite. There is quartz in granite. Sometimes the feldspar is replaced with quartz. The true granite is feldspar, mica and hornblende. Now, you can replace one or the other,—by leaving out one, you can either use more hornblende in a piece of granite and it changes the nature of the granite. It is not what I call true granite where it is quartz granite, because the granite should have the feldspar instead of the quartz. The true granite contains no quartz. At the same time, one piece of rock may have the granite and still contain quartz. I said the true granite was composed of feldspar, mica and hornblende. The silica in granite would be the quartz if there was any in it.

Those stratas I saw in shaft No. 1 would justify location, for the reason that they are in granite, and

(Testimony of William Mayger.)

because oftentimes in a granite formation, the fissure would not come to the surface, excepting in stratas up through the granite, and by following those stratas down they will unite and form one fissure, and that is why I would say any stratas coming up out of the granite in a section like this, I should say by going down in it I would find those united in one paying vein. I do not know anything about the ground out there, except from the examination I made. I might locate such stratas in the section around Butte. I might and I might not locate them because of what I saw in shaft No. 1. That would depend on circumstances. When I say those stratas were in place, I mean that they were surrounded by the country rock and unmoved. You could not tell from the development on them whether they were separate and distinct veins which might or might not unite in depth, but when you speak of rock in place, you speak of rock that has not been moved by man. I think the strike of those stratas in shaft No. 1 was east and west, easterly and westerly. I do not know the exact points of the compass.

From there I went to shaft No. 2. I found the same character of material in that shaft as in No. 1. I found stratas of quartz going down. Those stratas were exposed on both sides of the shaft. Both shafts were timbered down to about the height of a man's head. The [278] only portion of shaft No. 1 I could see was below the timbers. There was some snow in the drift and snow all over the dump. The stratas I saw in shaft No. 2 appeared about the

(Testimony of William Mayger.)

height of my head. I will say there were three anyhow. They were from one side of the shaft to the other. I will not say they were out to both sides, but in the face of that shaft from one side to the other, there were three stratas going down. I think the sample I brought down from shaft No. 2 indicates their width; I should say an inch wide; or an inch and a half. That sample, Exhibit 57 is also quartz. Defendants' Exhibit 57 is not aplite to my knowledge. I do not know anything about aplite. I have repeatedly stated that I do not know what you term aplite. Now, not knowing that, and I know nothing about the aplite of the geologist,—I have looked through Dana to find out about aplite and I cannot see that he ever notes it.

I did not see any other indications of lead in shaft No. 2, within these stratas I call quartz, which appear in the sides of the shaft as high as my head. I did not notice the dip; I presume they were nearly vertical. I rather think they have an inclination to the north. I would not be positive of it. The strike was in an easterly and westerly direction. These several stratas in shaft No. 2 were separate and distinct from each other; that is, there was granite in between them. In my judgment they would unite below. My former experience would tell me that they would unite below. Where they carry the same characteristics as these do, I should say they would unite below; I have found it so. Sometimes they pinch out and disappear, but I would not think so in this case. I have had some experience in gran-

(Testimony of William Mayger.)

ite, and oftentimes you will find little gash veins go down in granite and pinch out, but when they have been lined up like these have, my former knowledge tells me that the chances are those would go on down; but of course they might not. I saw indications of mineral in these stratas in shaft No. 2; it was principally iron. There is oxide of iron there and manganese of iron there. Between these stratas the country rock is granite, and on the outer sides of them it is granite.

From there I went to tunnel 31; Rabbit tunnel I believe they term it. [279] What I saw in shaft No. 1, shaft No. 2, in the north cross-cut from tunnel 31 and the end of tunnel 31 have the appearance of being one and the same vein.

Q. Is there any resemblance in the material you found in shafts 1 and 2 to the material you found in tunnel 31? A. Except being on line with the vein.

The WITNESS.—Tunnel 31, after I left the cross-cut north, did not seem to follow the vein. It crosses the vein at the last end, at the extreme end, and runs into the vein. This cross-cut, as I understand, extended more than is represented on this map; and it was the back end there that seemed to disclose this ore. The vein crossed tunnel 31 from one side to the other. It crosses a few degrees toward the north.

Q. Now, Mr. Mayger, looking at Complainant's Exhibit 17, assuming as we say it does that it correctly sets out the location of shaft No. 1, shaft No. 2, the north cross-cut of tunnel 31, and the end of

(Testimony of William Mayger.)

tunnel 31, state what you would reasonably say as to whether the material exposed in shafts 1 and 2 is a part of the same vein you see in the north cross-cut?

A. Well, I will take this map (referring to Defendants' Exhibit 1). There is where I measured. I am running a line right through shaft 1 and 2, and the end of tunnel 31.

The WITNESS.—Assuming that the vein in the north cross-cut of tunnel 31 is extended as I assume it is, it would come within that line. I do not know how many feet it would have to be extended; I do not know what this map measures. What I saw at the end of tunnel 31, I would say was the wall. It was a granite face, more or less brecciated, more or less solid, and I could not tell without seeing it extended further whether it was a wall or not. I was speaking about the cross-cut. The end of the tunnel 31 cuts through apparently the vein and discloses a fissure just before reaching the end. That fissure is quartering across the end of the level and shows a great deal of slicken slide,—a great deal of movement.

Q. Does it angle across as shown on complainant's 17?

A. I would sooner testify to this map, Defendants' Exhibit 1. I do not know anything about that map, Complainant's Exhibit 17.

[280] Q. Mr. Winchell once testified in a lawsuit on the opposite side from you, I believe?

A. Yes, sir, and I understand Mr. Winchell very

(Testimony of William Mayger.)

well. His map may be all right, but I would rather use this one.

The WITNESS.—I do not see the line showing that fissure on my map; it crosses at that angle, about east and west. Yes, sir, I do say that is a fissure. It is granite on the north side of it. The only evidence of width of the fissure is when you come back and go in the cross-cut to the south. There is a wall line there, or a slip, which probably indicates the other side of this fissure. On the left-hand side of the tunnel, it doesn't show the other side of the fissure, on the north. That is not a fault; it is in the sense that every vein fissure is a fault. A vein fissure is originally a fault in the crust of the earth; originally it was a fault through the country rock, the crust of the earth. Then it became filled with mineral, or mineralized ore you might say, or it might be unmineralized, and then it becomes a fissure. It is originally a fault through the country. I do not recognize any difference between a fault with ore in it and a fissure with ore in it. That is to say, in my opinion all veins were at one time faults through the country. I see evidence of movement in this fissure in the end of tunnel 31. I could not tell how it threw the vein there.

Q. You could not tell whether the vein disclosed in the north cross-cut from tunnel 31 and the north side of the tunnel, about thirty feet farther in, had been thrown north or south by that fissure?

A. No, I do not know. I could not tell from the developments there as to the throw of the fissure at

(Testimony of William Mayger.)

all,—or the fault,—but there is another fault at a small gouge probably fifteen feet before reaching the end of the level. There is a fault there. It apparently cuts the fissure and makes a fault there in the fissure itself, but I could not tell the exact distance of that fault. My answer to that is entirely with reference to the end of the tunnel; and my answer to your question now is that nothing in the cross-cut designates anything about the throw.

[281] The WITNESS.—The cross-cut cuts the fissure, and in cutting the fissure there is nothing to disclose any throw at all. There is nothing where I saw the fissure at the end of the tunnel to show which way the vein has been thrown. The course of the vein as shown in the cross-cut north from tunnel 31, and as shown in the northerly end of the tunnel thirty feet farther in, between those two points is a little north of east. This that I say is a vein in the tunnel did run a trifle north of east. From the development I could not tell you what course the vein would take from where it crosses from the north cross-cut from tunnel 31, to appear in shafts 1 and 2. I saw the development in shafts 1 and 2, and the disclosures in 31, and the vein material in 31 looked pretty good; and from that it is my opinion that the material I saw in shafts 1 and 2 would justify location as quartz claims. I made up my mind as to that from what I saw in shafts 1 and 2, and before I saw the tunnel at all. I had already concluded that it would justify location. There is iron in those stringers in 1 and 2. There may be other minerals

(Testimony of William Mayger.)

there, but I do not know. It would not look to me as though it carried anything of especial value besides iron. I went in the southerly cross-cut from the end of tunnel 31. Back in there, five or six feet from the face of that cross-cut, there is disclosed a crossing of a vein or slip, which crosses the cross-cut, practically square across, with the same dip as the vein in the end of the tunnel.

Speaking of the vein in the end of the tunnel, I mean the fissure. There is more or less granite on both sides of the tunnel. I said the slip in the southerly cross-cut and that in the end of the tunnel 31 had practically the same dip; apparently so; I did not measure either of them. The strike also was apparently the same, and I considered that the indications were that that was one side of the fissure. I do not think the slip I saw in the southerly cross-cut crosses it about squarely. I had no instruments with me.

Q. What was the material in that southerly cross-cut, on both sides of the vein or slip that you saw there?

A. Well, there was a south streak, carrying more or less mineral, but it was not very wide, a few inches wide.

[282] The WITNESS.—There were two sides to the south streak. I don't know whether you would call them walls. I said what I saw there was a seam, not a slip. On the south side it was granite, and on the north side more or less granite, and beyond it,

(Testimony of William Mayger.)

to the end of the southerly cross-cut, it contained granite.

Q. In the north cross-cut from tunnel 31, you came to copper-stained ore, which you call commercial ore, which was eighteen inches wide on its east end, and twelve inches wide on its west end,—is that correct? A. Somewheres in that neighborhood.

The WITNESS.—The material on the southerly side of that was more or less broken-up granite, and on the north side it was more or less broken-up granite. That was on the 3d of January. Where the new work had been done, I found a vein five or six, seven or eight inches, something like that, and beyond that was granite. This ore was copper. The vein as I saw it in the end of tunnel 31, I hardly think had a course that would bring it through shaft No. 9; it would be a trifle north of the shaft.

I then went to the Vesuvius shaft. I was in both the openings from the Vesuvius shaft. These cross-cuts were in the bottom of it. There is a vein of mineral crossing the north cross-cut; I have no notes as to how far that was from the shaft. I have just my recollection of it. It seems to me that it was about two-thirds of the way in, for the length of the level. I presume the length of the level would be about as shown on Defendants' Exhibit 1, which would be about 100 feet. That vein was similar to the vein in the north cross-cut of tunnel 31; green, copper-stained ore. It was not very wide, probably five or six inches. I think the material on both sides of it was granite. I think all the rest of that cross-

(Testimony of William Mayger.)

cut north from the Vesuvius shaft was granite. I did not not see anything outside of what was in the north cross-cut, outside of that tunnel, that indicates anything but granite or country rock. I did not observe the course of that vein as it crossed that north cross-cut from the Vesuvius. I had no means of telling that vein's course. I [283] was underground, and without instruments I could not carry a line down a shaft and measure. I am not sure whether that vein cut squarely across the north cross-cut from the Vesuvius shaft. My recollection is there were two veins crossing there. I will not say veins either, but seams crossing that cross-cut. One had a dip to the north and the other had a slight dip to the south. Those seams, if I remember right, were something like seven or eight feet apart. I think the one on the north end dipped to the north,—the farthest in. This second seam was a couple of inches wide, with stratas on all sides of it; that is north and south in the cross-cut. I know what joints are in the country rock. Well, I did not know joints, but bedding planes in granite,—I never saw any in granite. I do not think it is the kind of rock to show it. The country up around Marysville with which I am familiar is slate and granite. I only found joints or bedded planes in the slate. I do not think there is bedded planes in any granite; there is no such thing as a bedded plane in a piece of granite. I do not know whether joints are common in the granite of Butte. I know other fractures exist through the granite of Butte other than fissure veins. Granite being a rock

(Testimony of William Mayger.)

will break in all directions, and most all the granites are more or less broken in the neighborhood of a fissure. There is no line of cleavage at all in granite. The lines of fracture,—some would be in one direction and some in another. I call them simply cracks. I did not see a good many of those cracks in this north cross-cut from the bottom of the Vesuvius shaft. I do not think what I saw there was nothing more or less than joints or cracks in the granite, with a little mineralization in them.

At the end of the south cross-cut there is a level. You follow the level south. It is not a cross-cut. It is level from the shaft itself, and it comes to where it runs off east, with a cross-cut from that level, and at the end of that level there is another cross-cut running parallel with the first. At the end of this cross-cut is another level running parallel with the level from the shaft, and right at that point there is a strong seam of ore, running probably northeast and southwest. The end of the cross-cut from the [284] bottom of the cross-cut, there is a level running south and there is a level from that running east, and at the end of that cross-cut there is another level parallel with the first, running south. Right at the connection of these two last-mentioned levels, there is this strong seam of quartz or ore or mineral matter running northeast, or north of east, on its course east. That course did not appear in both sides of what I term the little level, it appears on the south side. I did not see it on the east side of the cross-cut at that point. It

(Testimony of William Mayger.)

crosses the last cross-cut. I saw it in both sides. It was twelve or sixteen inches thick. The material in it is quartz and ore; I have some samples here, I think, that came from there. In the south cross-cut I said it was fifteen or sixteen inches in width; it is granite on both sides; that is my recollection. I do not remember of seeing anything in the south cross-cut, except this last seam I have told you about. In the last cross-cut back, some three or four feet from its mouth or starting point, there is another seam crossing that there, running parallel with the original one right at the connection of the two. They were probably five or six feet apart; this one was probably three or four inches wide; I think there was granite on all sides of that. I think that is the last I saw there. I think I went throughout the length of that tunnel 34, on Defendants' Exhibit 1. There I saw a fissure vein in the tunnel. I only saw what appeared to be one of the walls of that; the other wall I did not see; I could not tell whether it was the hanging or foot wall I saw. As I went in the tunnel, it was on the right-hand side; I did not see any on the left-hand side as I went in. I think the tunnel was run outside of the vein. I do not think I saw much evidence of a vein until we passed the first cross-cut; we crossed over the winze; the vein there was to my right. I would not say all of it; there was considerable snow there and we had to be careful in crossing that winze, so I did not pay much attention to what was on either side. Just beyond that, I could see one wall to my right; it was turned off,

(Testimony of William Mayger.)

as you say, pitching to the south, a footwall. We came back and went into a cross-cut going south or southeast, and went down another little shaft and struck a level and came back on the vein again, and the floor in that level,—[285] there was quite a space there, probably four or five feet, that showed ore. I don't know whether that level was at the bottom of the Hornet discovery shaft or not. It was probably ten or twelve feet below the adit level of the tunnel. I do not think the adit level crossed the vein anywhere that I saw. I said we passed in another branch of the same tunnel and then went down a third shaft and back under the vein again, under where we were above. From the Hornet tunnel we went south through a branch of the tunnel and then went down a shaft and then back through another level. I would not say we reached the tunnel but to a vein as it appears below the tunnel, and in there we saw considerable ore on either floor, on the level. Digging down with a pick disclosed it. I think the vein showed five or six feet of ore there. I did not notice the country on either side of it especially, but I rather think it was granite.

Q. And did you notice from the vein, as you saw it there in that lower cross-cut back from the shaft, that you went down, that it was worked up into the tunnel and upraise? A. I did not go to that upraise.

The WITNESS.—I could not tell you how near I was to it, because I do not think we reached the tunnel itself. I do not think we were vertically under the tunnel, because the vein has some dip, and to reach

(Testimony of William Mayger.)

where the winze was from the tunnel above, you would have to go along quite a distance.

Q. But I mean when you came through that cross-cut from the shaft and you left the shaft and went in the cross-cut at the bottom? Did you go to the end of that cross-cut? A. I do not know that I did.

The WITNESS.—I do not think I saw the back end of that cross-cut. I simply went in far enough to see ore in the bottom of that level. It may have been fifteen or twenty feet from that shaft that we went to see that ore; maybe not so much. I did not see how it crossed that level. It was on the floor of the level I was looking at. I had been told there was ore there, and I made an examination to see; I was with Mr. Mason at the time. I had no previous [286] acquaintance with any of the defendants in this action before I came over here; I never knew any of the parties to this action before I came over on this trip. Mr. Nolan was in a firm that I employed over there, and it was through Mr. Nolan that I came over here.

Q. Well, now, in your opinion, take the course that you followed from the Hornet tunnel through the drift or branch tunnel south, down the shaft and back through the level to where you saw the ore again, was that the same ore as was shown up on the tunnel?

A. I think it was.

The WITNESS.—I think it was from the same vein.

Q. I am asking you to assume that that vein does appear in the north cross-cut as shown on Defend-

(Testimony of William Mayger.)

ants' Exhibit 1, and assuming the material you saw in shafts 1 and 2 to have a dip north on their downward course, toward the center of the earth, would the material in shafts 1 and 2 be getting constantly farther away from the north cross-cut, as shown on Defendants' Exhibit 1?

A. Undoubtedly that would be the case if you consider them the facts. I do not consider them the facts.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—I said I saw ore on the floor of that cross-cut from tunnel 31; I commenced to find that ore a very short distance from the tunnel. My judgment is that the lead there is south of the tunnel; that is, I think the tunnel is on the outer side of the vein itself. The vein is acting as one side of the tunnel,—that is, in the last and along where the winze comes down from the surface. It was covered over with a board, and that was full of snow and there was no chances to investigate right in that neighborhood. I said that in my judgment the lead that was disclosed in shafts 1 and 2 was the same lead that was disclosed in this tunnel. I take it, drawing a line through the two shafts I was in, and where I knew the vein to cross the end of that level, would be in line, and the likelihood would be that it was the same vein through the length of this cross-cut that discloses this vein. I understood it was extended beyond what is represented on this map, but it all depends on [287] the extent of the north cross-cut from tunnel 31.

(Testimony of William Mayger.)

Judge BOURQUIN.—Let the record show that he was indicating as the end of that tunnel, the end of tunnel 31.

The WITNESS.—In the case of leads, they are not of uniform width throughout their entire strike. In the line of my experience it would be possible for a vein twelve or fifteen feet wide to narrow up so that it would be only a foot of a vein. There is not any rule as to the width of a vein being continuous throughout its strike; I do not think their width would be continuous, as to make the two walls parallel one with the other.

Q. Now, take it in the case of this vein, this northerly one, is there anything in the character of the material of the lead you find in shafts 1 and 2 and the character of the material you find in the tunnel, dissimilar as you say it is in character, to suggest to you that they may be two separate veins?

A. No, sir. The only difference is the elevation of one and the other, the one being nearer the surface than the other.

The WITNESS.—I think it would be possible, within the limit of my experience and in my judgment, of this material I found in shafts 1 and 2 changing in character as you go down, so as to be similar to the material you find in the tunnel. I said I did not want anything to do with Complainant's Exhibit 17 because I know Mr. Winchell of old.

Recross-examination.

(By Judge BOURQUIN.)

I have seen maps before. There is only one way to

(Testimony of William Mayger.)

tell whether Complainant's Exhibit 17 is an exact copy of Defendants' Exhibit 1, except on a larger scale, and that is by measurement, and I do not think it worth while. The one map is sufficient for me to testify to, and I prefer to testify to that whether the other is correct or not. The fact that the scale is different precludes me from telling whether they are the same without measuring. When miners are running tunnels and are following veins, it depends upon the miner as to whether or not they run under the footwall; I would not in my judgment; I would not think it good practice.

Q. Now, when you find a tunnel run along and on one side of it you find a wall, and you do not find one on the other, and that wall [288] is dipping away from the tunnel, why wouldn't you conclude it was the hanging-wall instead of the footwall?

A. Well, I saw that situation up there, and I express my opinion in regard to it. My opinion is that that vein is to the right of that level, and in the last end; the level had left the vein and follows along the outer edge.

The WITNESS.—From where the winze comes down and enters the level to the end of the level, a half to a third of the length of that tunnel from that winze, is where I think the footwall is the side of the tunnel, on the right going in.

Q. I will show you a sample and ask you if, in your opinion, that would not be a case where a joint plane had occurred in the rock, which was filled with iron?

Q. You mean where the iron joins the rock?

(Testimony of William Mayger.)

A. Yes,—and of course there was another side to the plane not visible there.

A. I do not call this a joint plane. It is a slip; I mean by a slip that where the pressure of the two walls upon the material in between those two walls has forced them apart and moved them, they form slips, one working upon the other, and this mineral has been deposited there on one of those slips, but I would not call it a joint plane.

By Judge BOURQUIN.—We offer this in evidence.

(Received and marked Complainant's Exhibit 25.)

The WITNESS.—That is what I would term a vein upon which I would locate a mining claim. It is a vein. It is a slip within a vein. It could hardly exist without being in the fissure, and the fissure is the vein. My slip really is the same thing as a vein, a vein filled with some mineral bearing material, yes, sir. Judging from that sample, I would presume that Complainant's Exhibit 25 was taken from a vein.

Q. Now, I show you another sample and ask you if that is not what would be termed a joint plane in the granite, filled with iron mineral.

A. As I stated before, I do not believe joint planes have anything to do with granites.

[289] The WITNESS.—It is impossible for me to tell from this piece whether it comes from a fissure or not. If it is not a slip, it may simply be a crack through the crust of the earth, without any end or extent. You would have the granite on both sides in either case, and you have the iron in the middle.

(Testimony of William Mayger.)

If I had found that in place, I could probably tell what it is.

Q. Suppose you had found that in place, a fracture filled with material such as this I have shown you, would you locate that as a vein?

A. Well, there the conditions surrounding that structure would determine me upon what conclusions to come to. It might be simply a gash through the granite, as I stated before, without extent or depth.

The WITNESS.—A small shaft four by four might and might not determine that. There might be other evidence there that would form different conclusions.

Judge BOURQUIN.—This last one I offer in evidence.

The EXAMINER.—Received and marked Complainant's Exhibit 26.

Q. I will now show you one more, and ask you if that is not again a case of a joint plane in the granite, or what you might term a slip, filled with mineral-bearing material, iron.

A. I can only state as I stated in regard to the other matter, if I saw this in place, I could form some conclusion, but being broken out, there is nothing there to indicate whether that is simply through a gash in the granite or whether it comes within a fissure vein.

The WITNESS.—The amount of work necessary to determine whether it is a vein or a gash would depend altogether on circumstances. If it was a gash, very little work would determine it; if it was in an extensive fissure, it would take a good deal more. A

(Testimony of William Mayger.)

fissure indicates movement and a gash does not.

(Sample offered in evidence, received and marked Complainant's Exhibit 27.)

The WITNESS.—Those exhibits shown me, 25, 26 and 27, in their structure, the manner in which the country rock and the mineralized portion of it lie adjacent to each other, resemble more or less conditions as I saw them in shafts 1 and 2. With reference to what [290] I saw in the south end of the last cross-cut (referring to the Rabbit and Vesuvius cross-cuts), the samples, the manner in which the rock and mineralized material lie with reference to each other, but with reference to the cross-cut in the north drift or level, I do not think they do, because the material on either side was more or less friable, softer. The only distinction is this being friable could not get two pieces to stay together to any extent. They are not hard like this.

The sample you hand me I would call silicious ore, carrying iron. I think there is some quartz in it; in general it is quartz.

Q. Do you know the distinction between the manner in which crystals unite to form quartz and the way in which they unite to form granite?

A. Quartz crystallizes in one shape, very much. The same angles to a crystal of quartz in one and in the other would be the same. If you have some other ingredient in there besides silica, it has a tendency to change the angles of that crystal, so that it would not be pure silica.

The WITNESS.—I have had no more experience

(Testimony of William Mayger.)

in microscopic examinations of rocks than a mere pocket magnifying-glass.

(Last piece of rock offered and received in evidence and marked Complainant's Exhibit 28.)

Q. I will show you a part of Defendants' Exhibit 6 and also Complainant's Exhibit 28, and ask you if you can observe any difference in the crystals of quartz therein.

A. The crystals in Defendants' Exhibit 6 are much finer grained and the crystals are much smaller, and it is impossible to tell from the naked eye what form or shape crystals have, whereas the other sample shows the crystals in larger form.

The WITNESS.—This part of Defendants' Exhibit 6 is mostly quartz. It has more mineral in it in its oxidized form than what is in this piece.

Q. Well, now, isn't it a fact that the distinction between the crystals of quartz in what is termed vein quartz and what is termed granite, leaving out aplite since you say you are not familiar with it,—is that the crystals in the vein quartz interlock [291] while the crystals in the granite do not, but lie against each other as grains of sand and separate.

A. The crystals being finer and smaller, they must lie side by side, and they will lie the same in one as in the other, except the crystal is larger in one than in the other.